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Nepal Private Sector Engagement Assessment, 2020

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ACRONYMS AND ABBREVIATIONS

ACAP	Annapurna Conservation Area Project
ADB	Asian Development Bank
ASEAN	Association of South East Asian Nations
BFI	Banks and Financial Institutions
CBFM	Community-based Forest Management
CBMRN	Community-based Natural Resource Management
CBS	Central Bureau of Statistics
CFUG	Community Forestry User Group
CHE	Current Health Expenditure
CIF	Cost, Insurance and Freight
CMSC	Construction Material Supply Chain
CNI	Confederation of Nepalese Industries
CSO	Civil Society Organization
CSR	Corporate Social Responsibility
DDA	Department of Drug Administration
DRF	Disaster Risk Financing
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
EC	Executive Committee
EIA	Environmental Impact Assessment
EOM	Export Opportunity Map
FDI	Foreign Direct Investment
FenFIT	Federation of Forest-based Industry and Trade, Nepal
FOB	Free on Board
FUG	Forestry User Group
GCF	Gross Capital Formation
GD	Growth Diagnostic
GDP	Gross Domestic Product
GOI	Government of India
GON	Government of Nepal
GPP	Good Manufacturing Practices
HRV	Hausmann, Rodrik, and Velasco Growth Diagnostic Framework
IB	Insurance Board
ICDP	Integrated Conservation and Development Project
IEC	Information, Education and Communication
IMF	International Monetary Fund
LRN	Local Road Network
MAP	Medicinal and Aromatic Plants
MASL	Meters Above Sea Level
MCC	Millennium Challenge Corporation
MFA	Multi Fiber Agreement
MFN	Most Favored Nation
MFSC	Ministry of Forests and Soil Conservation

MOFE	Ministry of Forest and Environment
MOHP	Ministry of Health and Population
MRP	Maximum Retail Price
NARC	National Agriculture Research Center
NBF	Nepal Business Forum
NBSM	National Bureau of Standards and Metrology
NCC	Nepal Chamber of Commerce
NRB	Nepal Rastra Bank
NRM	Natural Resources Management
NS	Nepal Standard
NTFP	Non-Timber Forest Products
OPP	Out of Pocket Expenditure
PCI	Price Competitiveness Index
PE	Price-to-Earnings
PES	Payments for Ecosystem Services
PPCP	Public Private Community Partnership
PPP	Public-Private Partnership
PSE	Private Sector Engagement
RCA	Revealed Comparative Advantage
SAEDF	South Asia Enterprise Development Facility
SCM	Supply Chain Management
SCP	Structure Conduct Performance
SRN	Strategic Road Network
WDI	World Development Indicators
WHO	World Health Organization

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EXECUTIVE SUMMARY

For over seven decades, the U.S. Government has committed itself to improve the lives and livelihoods of all Nepalis. As the main provider of US foreign assistance, the Agency for International Development (USAID) works in almost all areas that, in one way or another, touch the life of a Nepali and are essential in improving their well-being – from social environment and economic development (agriculture, energy, natural resource management), health, education, governance, and disaster risk reduction, reconstruction, and resilience.

Over the years of USAID engagement in Nepal, many things have changed both in the country, as well as in the way the Agency conducts foreign assistance, which holds promise for the country's prosperity and stability. For the first time in decades, Nepal is experiencing growing political stability and improving governance, as it ratified a new constitution, elected a supermajority in government, and transitioned into a federal structure of government. Building on these successes, the Government of Nepal (GON) laid out an ambitious objective to reach middle-income status by 2030 and attain the goal for a Prosperous Nepal, Happy Nepalis. To make this happen, the GON must foster an environment where growth occurs at a rapid and sustained rate to make up for years of stagnation, strong enough to meet the needs of the rapidly growing population, and inclusive enough to reverse the high levels of inequality and poverty that characterize Nepali communities.

Nepal's economic landscape also has changed from decades ago in ways that indicate important roles for the private sector. In terms of capital inflows, in the 1990s, Nepal received substantial support in the form of official development assistance and concessional loans, which represented a total of 94 percent of foreign capital inflows into the country. More recently, this share shrank to 16 percent and was overtaken by capital inflows in the form of remittances from Nepali laborers working abroad, which now represents 83 percent of annual total capital flow into the country. Also, Nepal has the potential to grow foreign direct investment that currently stands at only 0.5 percent of GDP, which is among the lowest in South Asia. These changes in international capital flows point to the increasing capacity of the private sector to play a critical role in the transformation of Nepal's economy.

The changes in Nepal's economic landscape coincided with USAID's adoption of a new policy framework that articulates a renewed focus on supporting Nepal advance in its journey to self-reliance – to plan, finance, and implement Nepal's own solutions to development problems. Ultimately, the vision is for Nepal to transition from being a beneficiary of foreign assistance to a self-reliant and reliable partner promoting peace and prosperity in the Asian region. USAID recognizes in the new framework that official development assistance is not enough to address Nepal's seemingly insurmountable development challenges and advance the country toward self-reliance. At the same time, convinced by the overwhelming evidence on the power of enterprises to promote the well-being of Nepalis, USAID's work in Nepal will be informed by an awareness that increasing private-sector investment will be the primary catalyst for the type of transformative economic growth that leads to long-term improvements in the wealth and well-being of Nepalis. To guide future strategy in support of the Nepali people, the USAID Mission to Nepal requested USAID's Monitoring, Evaluation, and Learning (MEL) Activity to undertake this assessment on private-sector engagement in October 2019, which it did through a subcontract to Beed Management Private Limited.

As envisioned in the Private Sector Engagement (PSE) Policy, this assessment aims to inform the Mission's shift to more market-based approaches as a means to accelerate Nepal's progress on the Journey to Self-Reliance, by answering the questions posed in the policy for the Mission to consider every time it approaches development issues.

- What factors are constraining the private sector from involvement and investment to address Nepal's development challenges in the selected sectors?
- What role can USAID play to help alleviate or eliminate these constraints?

This study is designed as a series of eight sub-studies with separate research questions presented in each sub-section in the main text of the report that defines and limits their scopes. It aims to identify opportunities to engage with the private sector to provide market-based approaches to achieve inclusive and sustainable economic growth to reduce extreme poverty, inclusive and effective governance, disaster safety and resilience, and increase human capital in the form of a better-skilled and healthier population. Market-based approaches depend on the presence of an effective demand to achieve scale and sustainability on products and services that advance development objectives. The overall study conducted a rapid assessment on the factors that impeded the demand for investments that fuel economic growth, demand for pro-growth policies, demand for disaster-safe infrastructure and the derived demand for standard quality construction material, demand for standard quality pharmaceutical products that contribute to a healthier population, and demand for learning that results in productivity gains for the economy.

The assessment's sub-studies center on understanding the binding constraints that impede growth-enhancing investment. To this end, the study undertook two cross-cutting sub-studies, the first of which used the Haussmann-Rodrik-Velasco growth diagnostic methodology (HRV). HRV lays out the universe of factors that could potentially impede investment and provides a logical framework to determine if such factors are binding constraints, such as the high cost of capital, low social returns, and elevated risk on the ability of private investors to retain gains to investment. As public policy (or lack of) is suspected by many to be one of the primitive and proximate underlying factors that created the constraints to investment, caused the poor performance of various supply chains, including construction materials and pharmaceutical product supply chains, and contributed to the low human capital in Nepal, the second cross-cutting sub-study analyzed the GON's policy formulation process.

The assessment also undertook sector-specific sub-studies. As export market opportunities serve as a main driver that attract investment, the next sub-study assessed the strategic position of Nepal's merchandise exports using a two-factor export opportunity map that determines the proportion of products in the export basket that the country holds a comparative advantage in, as measured by the revealed comparative advantage (RCA) and the demand strength of those products' export markets; as well as using a product space analysis to determine the country's capability to accelerate growth through diversification into higher value-added export products. Another sub-study uses a price competitiveness index, assessing the competitiveness of four agricultural products, paddy, maize, potato, and tomato, whose imports have surged over the last decade. As the country's natural resources largely determine the sustainability of Nepal's growth trajectory, another sub-study explored market-based approaches for effective and efficient management of natural resources.

Two other sub-studies applied the Structure, Conduct, and Performance (SCP) framework to assess the performance of the construction material supply chain and, separately, the pharmaceutical supply chain to contribute to the reconstruction of disaster safe infrastructure and the promotion of better health in Nepal, and the supply chains' ability to correct poor performance in an organic manner. The sub-studies use the SCP framework to identify the factors impeding investments that created gaps in the supply chains to provide standard quality construction materials and pharmaceutical products at standardized prices in the market. A final sub-study used a Mincer Equation methodology to estimate returns to education in Nepal and assess whether investment to expand access to education likely will produce the expected productivity gains in the economy. This executive summary provides an overview of key conclusions and recommendations, with the substantiating findings and greater depth provided in the main text of the report.

BINDING CONSTRAINTS TO ECONOMIC GROWTH IN NEPAL

Investments[1] drive long-term economic growth as it increases aggregate demand, expands productive capacity, and grows productivity, which creates more market opportunities as countries become more competitive in the global market. Countries that experienced transformational growth, such as South Korea, Thailand, and more recently, Vietnam, demonstrated a sustained acceleration of investment, expansion of exports, and a growing share of high value-added products in the export basket, resulting in an exponential growth in per capita income.

This section of the report identifies the binding constraints using the HRV growth diagnostic methodology that have impeded investment and economic growth in Nepal. An earlier growth diagnostic study by the Asian Development Bank (ADB) and the Millennium Challenge Corporation (MCC) analyzed the binding constraints on Nepal's economy in the pre-earthquake period. This sub-study assesses if those constraints remain binding and if new ones have emerged in the period after the earthquake. The ADB and MCC study attributed the low level of private fixed capital formation (i.e., private investment) and slow economic growth to limited investment opportunities with a remunerative return to private investment and not to the high cost of finance. In particular, the studies attributed the low private returns to low social returns due to inadequate infrastructure (electricity and transport) and the low likelihood of retaining returns on investment due to uncertainty in policy implementation and challenges in industrial labor relations.

The current study began with an analysis of the economic performance of Nepal over the last five decades, examining the growth patterns experienced by the country and aiming to discover symptoms of maladies in the economy. The analysis reveals the following three insights on the economy:

1. Nepali enterprises have demonstrated the ability to increase investment when presented with profitable market opportunities. First, as Nepal gained preferential market access in developed western markets under the 1974-2004 Multi Fiber Agreement (MFA), its investment rate almost quadrupled to 17.6 percent at the end of the Agreement. Second, driven by a boost in aggregate demand from reconstruction activities, Nepal's investment rate increased by 6.5 percentage

[1] This study defines investment as private capital fixed capital formation, as measured in the national accounts.

points in the post-earthquake period, with gross capital formation ranking among the highest in the world in 2018/19.

2. At the end of the MFA, Nepal's economy entered a high migration and low growth (driven by remittance-led consumption) state, as the textile sector shrunk, and the economy failed to create enough job opportunities for new Nepali workers entering the labor market, who instead sought employment abroad. During this period, gross capital formation (GCF) accelerated, but mostly in the form of merchandise inventory that Nepali enterprises accumulated to meet growing consumer demand. However, with an overvalued Nepali currency and low productivity, enterprises met such an increase in merchandise inventory from imports. As a result, such growth in the GCF did not create a net increase in aggregate demand, and hence, had a limited impact on economic growth.

3. In the post-earthquake period, Nepal achieved a rapid growth of 7.3 percent, which, for the first time in decades, exceeds its South Asian neighbors by 1.4 percentage points. However, Nepal may not be able to sustain such rapid growth, for the following three reasons: a) waning pent-up demand for reconstruction; b) growth-focused primarily in two sectors – agriculture, and wholesale and retail trade (contributing 46 percent); and c) potential reversion to a remittance-led, consumption-driven economy, which produced a growth rate of 4 percent to 5 percent only.

The analysis made the following determinations on the binding constraints that have impeded investment and economic growth in the country in the post-earthquake period:

1. The study found abundant evidence that investment in Nepal is constrained because of low private returns to capital, not by low availability of savings (finance). That is, investors do not find productive investments, as the high cost and risk of doing business have eroded Nepali enterprises' competitiveness. As a result, they have priced themselves out in many markets in the world.

2. Economic activities in Nepal are not sufficiently rewarded (i.e., low social returns), primarily due to bad infrastructure. This study found electricity supply is no longer a binding constraint, as Nepal has successfully added new power generation capacity, increased use efficiency, and allowed trade with India to meet supply deficits during peak load periods. However, the high cost of transport remains a binding constraint. Road access remains a challenge not only in terms of reach but in terms of the quality of roads. Nepal's landlocked location, difficult terrain, and poor-quality road systems continue to raise the cost of moving products within the country and across the border, and the domination of transport syndicates adds to the complexities. Unlike electricity where supply deficits can be substituted by imports from India, transportation is a non-tradable service, and any supply deficits directly translate into higher fees.

3. The problem of low social return to investment is compounded by the considerable downside risk in realizing the return expected by investors. The MCC study identified policy implementation uncertainty as a binding constraint, which it attributed to political instability.

Despite the growing political stability in the country, policy uncertainty remains a binding constraint due to institutional and bureaucratic weaknesses, such as the confusion in the transition to a federal structure, which, according to the IMF, faces monumental challenges. In addition, the high cost and risk of doing business burdens Nepali enterprises at every stage in their life-cycle - from starting a business, to operating one, and up to liquidation - are burdened by cumbersome business and property registration, weak contract enforcement, long waiting times in getting electricity and in dealing with construction permits, high collateral credit requirements, and uncertain rules in resolving insolvency. Furthermore, such a weak regulatory environment opens many opportunities for corruption. To compensate for the elevated risk resulting from this poor business environment, Nepali enterprises demand a higher share of profit from the price of exported products, sometimes exceeding the share by 7 percentage points in comparable countries, which erodes their competitiveness in the world market.

4. Although not a binding constraint yet, an increasing concern for investors is macroeconomic risk emanating from Nepal's persistent and widening deficits in almost all economic accounts, including trade, current accounts, the balance of payments, and fiscal budget deficits. Expected adjustments by the GON to address these deficits signal a potential loss of economic value of investors' returns to investment. For example, Nepal's staggering trade deficit, declining foreign reserves, and overvalued currency signal a potential for depreciation of the Nepali Rupee and the resulting inflationary pressure on prices. Furthermore, Nepal's fiscal deficits and rising public debt signal potential future tax increases. All these adjustments result in reducing private investors' expected returns and create a significant drag on investment growth in Nepal. The market already factored in investors' looming concern over these macroeconomic risks with a low price-to-earnings (PE) ratio of stocks in the country, as investors add a risk premium to the discount rate in deriving the stock prices. Nepal's average PE ratio of 13.2, as of 2019, is less than half that of India's 22 to 29 PE ratio for that period.

The severity of these binding constraints has discouraged economic activities and weakened investment demand, with a cascading impact resulting in a weak derived demand for finance, human capital, and natural capital. As such, they fail HRV's diagnostic tests for a binding constraint, especially the first one - a high shadow price (value assigned to difficult-to-calculate costs in the absence of correct market prices) for a binding constraint.

1. Although the market is showing some tightness in supply, the cost of finance is not yet a critical binding constraint to investment and growth in Nepal. Excess supply of savings and a low price (HRV's first diagnostic test) provide market evidence that finance is not yet a binding constraint. Nepal's gross national savings have exceeded the gross capital formation during most of the pre-earthquake period. Nepal experienced a shortfall in savings only in the post-earthquake period due to the artificially high level of reconstruction activities. However, even with the recent deficits in savings, local financial institutions are not rewarding depositors enough to raise domestic capital. The real deposit rate (inflation-adjusted) is only between 1 percent to 2 percent. Furthermore, the real rate for 365-days treasury bills, as well as the real rate that banks

charge each other, is still in the negative territory. In addition, Nepal has not aggressively pursued international financing in the form of debt financing as its debt burden remains low (33.7 percent of GDP in FY2019/20), as well as in the form of foreign direct investment (FDI), as its FDI-to-GDP ratio remains among the lowest in South Asia (0.5 percent of GDP). In the future, if infrastructure, micro and macro risk issues are addressed and economic activities begin to accelerate, this situation may change, and credit access may be more binding.

2. Nepal's economy is not constrained by low human capital. The shadow price of human capital, which is measured in terms of return to education, is low, thereby failing HRV's first diagnostic test. Furthermore, this suggests that enterprises in Nepal are not outbidding each other to secure a limited supply of human capital resources in the market. In fact, Nepal's high unemployment rate (11.4 percent), high proportion of working age population that can potentially join the labor force (12.5 percent), and migration equivalent to the total number of new entrants in the labor market, suggest an excess supply of labor in the market.

3. Nepal's natural capital poses a mix of challenges and opportunities but is not a binding constraint to investment and growth. Its landlocked location and mountainous geography pose a challenge in moving products within Nepal and across the border. However, the same challenging natural capital has provided Nepal with water resources that have the potential to generate 40 GW of hydropower, as well as endowed the country with a topography and biodiversity that offer unique natural tourism assets and agricultural production potential that it can leverage to grow the economy.

Given the above-mentioned challenges and binding constraints, Nepal needs to undertake smart policy reforms that would promote global integration that opens market opportunities for Nepali enterprises, domestic liberalization that improves investment climate and ease of doing business environment, and investment in physical capital that strengthens connectivity in order to sustain growth momentum and ultimately reach the middle-income status that it aspires to achieve by 2030. Otherwise, the economy will revert to high migration, low growth equilibrium that produced a growth rate of only 4 to 5 percent that failed to support the creation of jobs needed to absorb new entrants in the labor market.

PROMOTING A PRO-GROWTH POLICY REGIME IN NEPAL

The HRV growth diagnostic study identified that the binding constraints that impeded investment and growth in Nepal emanated mainly from the policy actions (or lack of) by the GON that resulted in low social returns to capital and in an elevated risk faced by investors on their ability to retain a large share of that return. For this reason, the Democracy and Governance section of the study assessed the adequacy of the GON's policy formulation process to promote an efficient market as a way to accelerate growth.

The private sector is an essential counterpart to the government in framing pro-growth, business-friendly, and accountable governance policies. Although the GON's formal policymaking process codifies private sector participation, the lack of inclusive involvement from a broader set of private sector stakeholders has allowed a narrow business interest group to capture the process with many adverse consequences on the economy.

Post 2015, Nepal transitioned from the unitary government structure to 753 local government units, seven provincial governments, and the federal government. With the advent of this structure, the subnational governments are equally important stakeholders with powers to adopt pro-growth policies in coordination with the private sector, as granted by the new Constitution. However, the authority of local governments may be limited to address constraints relating to macroeconomic imbalances, poor investment climate and business environment. In addition, local governments still lack capacity to efficiently use scarce resources, executing their plans and budgets without proper guidance from a full-fledged development plan, according to the IMF. The study recommends the formation of public-private engagement platforms, as policy formulation has become increasingly decentralized after federalization.

Nepal's policy failures can be blamed on the biased structure that governs the participation of the private sector on policy formulation and implementation. Three umbrella organizations of the private sector, Federation of Nepalese Chamber of Commerce and Industries (FNCCI), Nepal Chamber of Commerce (NCC), and Confederation of Nepalese Industries (CNI), were granted by law monopoly to dominate the policy formulation discourse. As expected, these business associations advanced their narrow interests, and, without any countervailing interest that is of equal influence, GON policies largely remained protectionist. These private sector associations function as the agenda setter, influencer in policy analysis, and take on key positions as a member of the policy drafting committees, as stipulated by law. In addition, they utilize their position as negotiators on behalf of the private sector to lobby for their vested interest. The dysfunction in the GON's policy process manifested fully, when, despite an abundance of talk about liberalization, the final Foreign Investment and Technology Transfer Act (FITTA) included stronger protectionist provisions, as some industries (e.g., dairy) remained prohibited from foreign investors and as the minimum capital requirement for FDI increased ten-fold to half a million dollars.

Similarly, the findings of this sub-study indicate that there were manipulations in the processes of policy formulation in terms of agenda-setting, weak policy analysis, and inefficiencies in the policy drafting committee due to bureaucratic shuffle and unclear boundaries on the role of committee members. Rent-seeking through collusion remains pervasive throughout the policy process, until laws, policies, and regulations are finally approved. The lack of ownership and institutional coordination among the implementer of policies has contributed to the poor implementation of many policies in Nepal. For example, the Special Economic Zone (SEZ) has not attracted export-oriented investors, as it originally intended, due to poor implementation.

In terms of advocacy, the agenda of the private sector is heavily influenced by the "pseudo-private sector" that comprises an elite group across the aristocratic, democratic or current federal structure. Business associations that are dominated by family-run businesses and that lack representation from new entrepreneurs in emerging sectors, as well as lack inclusive participation in policy advocacy and policy formulation further compounds the problem. The private sector associations that are currently in the position of lobbying with the government thrive under the current policy regime that grants them market power, usually leading to abnormal profits, compromised product quality, and lenient tax rules, as well as opening artificial arbitrage opportunities that do not contribute toward building the country's productive capacity.

While the private sector and politicians work very closely and informally in policy formulation and implementation, alternative structures have not been successful. For instance, Nepal Business Forum (NBF), modeled around successful platforms in the region, did not survive the politics within the government and private sector. Although successful in introducing some meaningful policy reforms, such fora lost relevance as support from international donors waned because businesses could still leverage their connections with policy makers to bypass formal policy structures and processes in order to advance their interests.

In addition, the dysfunction in the formal policy formulation process emanates from the supply side, as well as from the demand side. On the demand side, citizens who were adversely affected by the economy's poor performance (e.g., limited employment opportunities for labor, limited investment opportunities for capital and deteriorating purchasing power for consumers) have not yet initiated effective demand on the incumbent political leadership and the bureaucracy for them to undertake reforms and adopt sounder economic policies. The weak advocacy for change in the country is partly due to the absence of young, educated, and informed Nepalis, many of whom migrated to work abroad because of the limited, enabling employment opportunities in the country. On the supply side, remittances that migrant workers regularly send to families in Nepal (which reached $7.8 billion in 2018 and represented 25 percent of GDP) relieves any pressure on the government since it provides enough tax revenue for the government to continue to operate in business-as-usual manner, regardless of the economy's performance.

This study recommends a multi-pronged approach to strengthen private sector engagement in the policy formulation process of Nepal. The most important one is broadening participation by bringing in actors that are not affiliated with existing private sector associations. In addition, it is important to decentralize the process and increase transparency. It is important to augment the capacity of secretariats of business associations by converting them to professional organizations from political organizations with the support of development partners. To reinforce public-private dialogues, platforms like the NBF could be recreated to increase engagement between the two parties and facilitate communications and build trust to achieve a common development agenda. For this, efforts are required to build a collective, broad-based commitment from the public and private sectors, as well as the donor community, to structure incentives such that no single vested interest group can dominate the process. Furthermore, it will be important to develop neutral, competent think tanks that can conduct independent and objective ex-ante policy analyses and evaluations. The development partners can help such think tanks to develop technical competence and to adopt global standards in governance, internal control, human resource management, and communication and outreach strategies.

EXPANDING TRADE AND INVESTMENT TO FUEL ECONOMIC GROWTH

Increasing orientation toward the world market played a critical role in the countries that experienced economic transformation, as expanded export opportunities incentivized the acceleration of investment. In turn, investment opened new market opportunities as it fueled productivity growth and improved competitiveness, which set into motion the virtuous economic logic that brought about the economic transformation. For Nepal to graduate to middle-income status, the country needs rapid and sustained

economic growth, led by exports. However, increasing imports and declining exports have led to a staggering trade deficit that continues to widen. Nepal's weak trade sector created limited market opportunities to incentivize investment, which hampered its growth. Similarly, Nepal's exports are concentrated on a narrow and low-value product base and rely on the limited number of trading partners, which made it vulnerable to the changes in the global demand. Trade gains in the mid-1990s, when export to GDP ratio peaked at 26 percent, eroded, and the export ratio declined since then, reaching below 10 percent, an all-time low over the last two decades. In contrast, over the last five years, the average share of exports to GDP in the fast-growing economies of South-Eastern Asia reached 64 percent, with Vietnam having the highest share of 87 percent.

The study used the concept of an Export Opportunity Map (EOM) to assess the strategic position of Nepal's merchandise export basket based on two factors: namely, the productive capacity of the country as measured by the revealed comparative advantage (RCA) and the strength of demand in the world markets of its exports. Fast-growing economies in Asia expanded the role of trade in their growth by gaining comparative advantage on a large proportion of products in the export basket that they marketed in expanding world markets, while minimizing the proportion of products where the country does not hold a comparative advantage, and their world markets are shrinking. The study found that Nepal's export situation deteriorated over the years. On products with expanding world markets, Nepal lost comparative advantage over a significant proportion of products in the export basket, as the share of these products declined from 35 percent in 1999 to only 6 percent in 2017. Furthermore, Nepal failed to improve its comparative advantage over a very large proportion of products in the export basket with shrinking world markets, as the share of these products remained very high at 59 percent. However, Nepal expanded exports of some products (e.g., palm oil) to India, but these were driven by artificial arbitrage opportunities created through tariff differential favoring Nepal over other third country suppliers in India, under the Nepal-India trade agreement.

In addition, the study used the product space methodology to analyze the connection between trade and economic growth in Nepal. Based on solid empirical evidence, this new analytical tool established that countries develop by gaining productive capabilities to produce and export more complex products (i.e., associated with high-value addition). The analysis revealed that Nepal's low export volume is dominated by products with low complexity, such as agriculture products, textiles, and garments. Furthermore, over more than two decades, Nepal's diversification largely depended on movements to nearby related products that were within the same garments and agriculture community of products. As a result, Nepali enterprises failed to build a cumulative mastery of activities that were needed to diversify into more complex and high-value export products, as evidenced by its largely stagnant complexity index. As a result, the country's long-term growth rate remained at a low rate of 4.5 percent.

In practice, a country gains productive knowledge as entrepreneurs experiment and tinker with technologies from established producers abroad and combine them with capabilities (e.g., in-bound logistics for raw material inputs, workforce skills, out-bound logistics for finished products, trade promotion and facilitation, access to finance, and etc.) that are already used in producing and exporting existing products. This is done to discover new, related products that can be produced at a low enough cost to be competitive in the world market and still make remunerative returns to investment. Experimentation will allow entrepreneurs and enterprises to acquire a mastery over a broad range of

activities that will allow countries to increasingly diversify, to move into nearby related products and to jump into more distant and complex products. As this process of experimentation and diversification proceeds, the resulting cumulative mastery of activities will set into motion an economic logic that will accelerate investment and trade, and ultimately bring about economic transformation in the country. Nepal needs to lower the cost of experimentation to incentivize enterprises. This may involve regulatory reforms to improve the investment climate and the doing business environment, favorable tax regimes, and access to good infrastructure.

As a way forward, the report provides recommendations for Nepal on the ways to expand the role of trade to accelerate economic transformation based on the Vietnam experience. Vietnam's complexity index was lower than that of Nepal for more than a decade from 1995 to 2007. However, Vietnam diversified its export basket by first moving to nearby products in the garments and agriculture community of products, but later the country jumped into more complex and high-value exports, including the machinery and electronics community of products, which successfully grew into a larger share of the world export market. Such product diversification allowed Vietnam to sustain an expansion in export to approach a 100 percent share of GDP, with a growing share of its export basket representing products with higher levels of complexity, as well as accelerate its investment rate and sustain it over a decade. This resulted in a rapid and sustained economic growth above 6 percent. This transformed Vietnam's economy from among the 30 poorest countries in the world in 1995 to become a middle-income country in a matter of a decade and a half. The recommendations, aimed at the country and development partners, focus on strengthening the manufacturing industries, and improving the business enabling environment and the rule of law, infrastructure, taxation, and special economic zones. Several of these recommendations overlap with those found in the section on growth diagnostics and the discussion on tourism. These recommendations include supporting investment in industries poised to improve the country's manufacturing base in expanding markets with competitive advantages; improving contract enforcement and business registration simplification; promoting timely disbursement of capital expenditure and of public-private partnerships for transportation infrastructure; and improving the tax base and lowering the rate.

LEVERAGING COMPETITIVE AGRICULTURAL PRODUCTS FOR THE DOMESTIC MARKET

In 2018, Nepal's agricultural goods imports reached NPR 224 billion, comprising 16 percent of total imports. The study examined Nepal's competitiveness in fine rice, maize, potato, and tomato, as measured by a price competitiveness index (PCI) that compares in a ratio the domestic wholesale price with import price in the same market. Nepal's imports of these agricultural products grew significantly over the last decade. The growing import market of these products provides opportunities to incentivize investment if Nepal can organize a supply chain that can provide these products in the market at competitive prices. The study found that Nepal can be competitive with fine rice and maize, but not with potato and tomato.

Nepal can supply fine rice and maize at competitive prices in the domestic market against imported products from India, as shown by the PCI below 1, at 0.84 and 0.67, suggesting a 16 percent price advantage on rice and 33 percent price advantage in maize. In addition, targeted interventions to adopt improved seed varieties, advanced soil management practices, and mechanization of some farm

operations, may raise yield and reduce the cost of labor, such that Nepal's rice PCI may further improve from 0.84 to 0.60, while the maize PCI will remain largely unchanged.

However, Nepal's competitive fine rice and maize sectors, on the one hand, and surging imports, on the other, suggest severe coordination failures across the value chains. That is, many of the interventions needed to take advantage of Nepal's low cost, and to organize a commercial fine rice and maize supply chain to compete against imports may require simultaneous investments to be made at various points in the value chain in order to become profitable. Unless upstream and downstream investments are coordinated simultaneously, even a low-cost fine rice and maize sectors may fail to develop commercial supply chains to capture Nepal's growing import market. In addition, coordination failure includes the absence of enabling policies that would make those necessary investments feasible and profitable. For example, a contract farming law may be needed to facilitate the consolidation or pooling of small farms to allow the mechanization of some farm operations and take advantage of economies of scale.

On the other hand, Nepal cannot supply potato and tomato at competitive prices in the domestic market, as shown by the PCI above 1, at 1.31 and 1.02. However, the same targeted interventions described above may enable Nepal to compete in the domestic market, as the PCI decreases to 0.98 and 0.97. In the case of potato and tomato, which are perishable, Nepal needs to invest in post-harvest equipment and facilities to reduce post-harvest losses and to allow small-holder farmers to market their products when prices peak, rather than immediately after harvest when prices reach their lowest level in the year.

The study presents recommendations on actions that will enhance market coordination and private sector partnerships to develop a profitable commercial supply chain for fine rice and corn. This includes improving irrigation efficiency, improving the supply chain to increase the use of improved agricultural inputs and reduce imports, improving access to financial services and products, developing cold storage and warehousing facilities to reduce losses and better time sales, developing market information services and insurance products. Consolidation of land management and operations, while maintaining required dispersed land ownership, would allow the use of improved inputs, adoption of advanced farm practices, especially in soil fertility management, and mechanization of some farm operations that will take full advantage of the economies of scale. In addition, small-holder agricultural producers may need market information services to make optimal production and marketing decisions, post-harvest equipment and facilities to avoid losses from spoilage, and access to insurance products to protect farm investment and income against extreme weather events and other natural disasters.

In particular, the private sector can be encouraged to design a mechanism to address the severe value chain coordination failures that impede small-holder agricultural producers and distributors from taking full advantage of Nepal's low cost of production. For example, such mechanisms can include the following components: 1) an entrepreneur can provide local producers with advanced inputs and extension services to increase the productivity, as well as an insurance product to protect farm incomes against extreme weather events; 2) an entrepreneur can invest in storage facilities and provide storage service to local producers to smoothen corn supply and meet the year-round volume required by feed compounders; 3) an entrepreneur can arrange a financing scheme that uses the corn stored in warehouses as collateral to pay farmers upon sale and at the same time provide a similar credit terms that Indian suppliers offer to feed compounders; and 4) an entrepreneur supplying corn to feed compounders can procure 80 percent of the corn from local producers and the other 20 percent from

imports, in order to maintain current its contact with Indian suppliers as well as logistics service providers. With this arrangement in place, the entrepreneur can easily secure corn supply from imports, to meet the requirements of feed compounders, in cases of crop failure in Nepal. These services that provide advanced inputs, extension services, insurance, and financing to local corn producers entail additional cost. However, if these additional costs can be paid by the current 33 percent corn price differential between Nepal and India, Nepal can gain a growing share of the $109 million import market, and, at the same time, raise the income of local small-holder corn producers.

EFFECTIVE AND EFFICIENT MARKET-BASED APPROACHES TO NATURAL RESOURCE MANAGEMENT

In Nepal, Natural Resources Management (NRM), the sustainable utilization and management of natural resources has undergone major political, economic, social and environmental changes, which has also transformed the NRM approaches and practices. The NRM section of the report attempts to explore four market-based approaches for NRM, including payment for ecosystem services (PES), timber, non-timber forest products, and ecotourism.

PES is an innovative and promising mechanism that represents market-based solutions, where the beneficiaries or users of an ecosystem service make payments to the providers of that service, thereby ensuring a sustained supply of services. Nepal does not have a specific policy or legislation which fully supports or facilitates the institutionalization of PES but has accorded high priority for generating sustainable conservation finance through the selling of ecosystem services such as tourism, carbon, and water resources. The Environmental Protection Act of 1996 and related regulations indirectly support the principle of "polluters must pay" and "compensatory schemes" for industries, there is a need for a concrete policy framework with an umbrella legislative instrument that entails concrete institutional mechanism and framework, and both vertical and horizontal coordination among government departments and agencies to avoid problems at the implementation level. Forest products can contribute up to 20 percent to the country's GDP from the current 5 percent if the forest resources are utilized properly.

There is a huge gap between demand and supply for wood products due to over-regulation and frequent policy changes, interference from agencies (for instance, police, local government, etc.), and promotion of timber imports. Past policies and regulations tend to restrict and hinder rather than stimulate private investment in forestry. Moreover, the sector is dominated by a considerable level of unregulated trade due to multiple taxations. Therefore, Nepal has rich opportunities to promote private forestry by fostering technical and technological services to grow and manage fast-growing tree species and simplifying regulatory provisions such as registration, harvesting, transportation, sale, and processing. The fiscal and legal provisions relating to forest-based industries need to be revised at all levels and also supported with market linkages that connect private and community forests to forest-based industries. Similarly, the ceilings on landholding for private forestry and the leasing process for government forest land for private lessees may need to be revised for economies of scale consideration. Certification should be made mandatory to increase its influence in bringing about political and social change. Lastly, to increase forestry's contribution to the economy, it needs to be recognized as a productive sector and be brought under the existing mandatory credit policy provisions of banks and financial institutions.

Varying geography and climate have endowed Nepal with rich biodiversity, making its forest not just a source of wood products, but more importantly, of Non-Timber Forest Products (NTFP), commonly known as *dJadibutid*, which are harvested from the forests, pasture ecosystems, and other wild habitats. The commercialization of NTFPs proliferated with its increasing use as vital ingredients in items, such as cosmetics, herbal medicines, and healthy foods. Most of these products are collected and exported to India in an unprocessed form and then re-supplied to other countries by the Indian traders. The full potential of NTFPs has not been realized, as the sector faces administrative and bureaucratic hurdles that hinder private sector participation. There is a lack of proper certification mechanisms in terms of setting the quality standard, which further leads to volume-based payments rather than encouraging best practices. There is poor branding and packaging of the products with high-end products perishing even before reaching export destinations.

In addition, it is important to create a marketing information system that would collect, analyze, and communicate information about the existing products and markets. Indigenous knowledge is very important in developing marketing information systems. Furthermore, standardization is key to ensuring forest product certification to be proof of a product from a sustainably managed resource with the logo of the place of origin or a brand name. Lastly, institutional and systemic policy reforms have to be made along with initiatives to educate collectors on indigenous and different forms of processing and storing technologies.

Globally, travel and tourism are generally a growing industry, and, for Nepal, it has emerged as one of the principal foreign exchange earners. Offering diverse topography, varied eco-climatic features, rich biodiversity, and unique cultural heritage with ethnic diversity, Nepal is an ideal destination for the promotion and development of ecotourism. The Annapurna Conservation Area Project is one such model ecotourism project that has won global accolades. There are multiple opportunities in the sector as the government gives high priority in terms of facilitating investments. With India and China dominating the global outbound markets, the potential in terms of number of visitors is immense. Nepal's strategy tends to focus on tourism for poverty alleviation and not wealth creation, hence the emphasis on high-volume, low-value market. However, Nepal has not fully exploited the high value tourism market. Poor road networks, poor safety records of domestic airlines, and insufficient airports make it difficult and costly to access destinations with ecotourism potential. Besides poor infrastructure, the quality of facilities in a tourist destination and service delivery do not meet the expectations of high-end travelers. In terms of distribution, tour operators based outside of Nepal are dependent on international tour operators and cannot compete in terms of marketing and developing tourism products.

For Nepal to realize its full ecotourism potential for the high-end market, support is essential to improve connectivity to key destinations through their identification and preparation of connectivity master plans. Improvement in infrastructure should be supplemented by proper management. Nepal could take some of the lessons learned from African countries, such as Rwanda, Zambia, and Mozambique, where they use a destination management organization to manage the destinations. There is also a tremendous opportunity to create better human capital for the tourism sector. Lastly, the entire policy paradigm related to protected areas and community forests regulation need to be reviewed to facilitate leasing, permits, and licenses within protected areas and forests as tourism assets.

In all these above areas of NRM, there exist multiple opportunities for development partners to leverage their experience in other countries and use their convening power to bring together different stakeholders to push a unified agenda that includes improving connectivity to key destinations, tourist infrastructure and related regulations, coordination among stakeholders to develop ecotourism destinations, utilizing destination management organizations to manage and develop some destinations, improving access to skilled labor, and reviewing protected areas and community forests regulation and policies.

DISASTER RISK MANAGEMENT: CONSTRUCTION MATERIAL SUPPLY CHAIN THAT DELIVERS QUALITY PRODUCTS FOR DISASTER-SAFE INFRASTRUCTURE

The National Planning Commission estimated that losses from the 2015 earthquake reached USD 9.4 billion, out of which housing and human settlements (HHS) infrastructure sustained most of the loss at USD 3.5 billion. A significant part of this amount represented the value of 811,000 homes, 8,200 schools, and 1,200 health facilities that were damaged during the 2015 earthquake.

The damages exposed the weaknesses of HHS infrastructure that did not have any seismic-resistant features or were not in accordance with the building codes or were constructed using poor-quality construction materials by an inadequately trained workforce. A USAID private sector landscape assessment reported that the current state of quality assurance and control for construction materials is fragmented. There is lack of uniform standards, and an effective verification system casts doubt on the entire industry and depresses consumer confidence on the entire market for construction materials, raises the risk exposure of Nepalis to, as well as multiplies the adverse impact of disaster events on economic activities. Since the private sector is an integral part of the country's disaster risk management system, this assessment focused on market-based solutions to reduce the physical and financial risks associated with disaster events.

This study provides a rapid assessment on the factors that impede investments that improve the supply and demand of standard construction materials (i.e., brick, cement, steel, sand, and aggregates) to construct disaster-safe residential buildings and public complexes (e.g., commercial complex, hospitals, schools, etc.). In addition, the study assessed the hindrances in the development and use of financial and insurance products that contribute to disaster-safe infrastructure and resilience.

The use of standard quality construction material is indispensable to construct a disaster-safe infrastructure, together with a code-compliant building design and a competent workforce to implement the building plan. In Nepal, suppliers of construction materials co-mingle products of sub-standard quality and products with degraded quality, with all other products in the market, thereby exposing Nepali households to higher risk of structural flaws and resulting physical and financial damage during disaster events. This poor performance emanates from failures in three levels of the construction supply chain.

First, GON agencies lack capacity to regulate the construction sector. The National Bureau of Standards and Metrology (NBSM) serves as the principal agency for designing, implementing and monitoring the standards of construction materials. There are NBSM standards for bricks, cement, and steel but not for sand and aggregates. However, the lack of robust monitoring makes it difficult to ensure that standards

are adhered to by agents in the supply chain. In addition, lack of standards and enforcement of proper product handling practices (e.g., transport and storage) of wholesale and retail distributors compromise the physical integrity of construction materials and result in significant degradation of product quality as they move through the supply chain up to the point of last sale.

Second, and most important, the construction material supply chain lacks a consistent incentive structure to create an effective demand for disaster-safe infrastructure, as well as the derived demand for standard quality construction materials. Final consumers should be the most vigilant interest in the supply chain to insist on standard quality construction materials. But such vigilance could weaken and result in compromised preference for quality construction materials due to cost considerations, especially that the adverse impact of sub-standard materials on infrastructure quality is not immediately apparent and is only tested under disaster events, which are infrequent. In addition, the expectation of another GON assistance based on GON actions after the 2015 earthquake may weaken such consumer vigilance against sub-standard quality construction materials and dampen any demand for protection through insurance instruments. Even if final consumers remain vigilant against sub-standard quality construction materials, they lack the competence in making quality determination and must be protected by the proper GON agencies and policies. However, GON agencies and policies fail to protect the interest of final consumers. For example, under Nepali law, no party is held liable for structural flaws or problems in the building once it is in use (e.g., Latent Defect Liability or Decennial Liability). As a result, agents hired by final consumers – architects, engineers, construction firms, who are most competent to protect consumer interest – do not have the legal and financial obligation to do so. Furthermore, the GON failed to put in place a robust inspection requirement to add another layer of protection on consumers. For example, only in-house engineers and GON representatives conduct inspections during and after construction, while an inspection from a third-party, such as an external engineer, would make the inspection objective and result in more robust protection of consumer interest. Moreover, in-house engineers and GON representatives conducting inspections only require a university degree and professional registration, and do not require any minimum years of experience or to pass a certification exam.

Third, even with heightened awareness on disaster risk and prevention, the construction supply chain lacks mechanisms to fully inform final consumers on product quality and prices, creating market inefficiencies such that the market fails to discipline agents to improve performance of the supply chain in an organic and systemic manner. Nepali customers must be empowered with market information that will enable them to differentiate competing wholesale and retail distributors through a certification mechanism that can be based on factors, such as buying products from sources with good manufacturing practice certification, using appropriate transport equipment and proper storage facilities, in order to exercise their purchase decision in such a manner that would impact the distributors' financial viability. This is the only way that consumers can influence their conduct in the market in terms of adopting standardized pricing and good product handling practices, which will ultimately improve the performance of the entire construction supply chain and will benefit every Nepali in the construction materials market.

In addition, recent developments in mortgage financing and disaster insurance provide rich opportunities to strongly reinforce an effective demand for standard quality construction materials. Banks and financial institutions (BFI) finance a growing proportion of new construction in Nepal. As part of the terms in the mortgage loan, BFIs require borrowers to cover the financed asset with an insurance policy against

disasters, such as earthquakes and fire. The study estimated that BFIs finance at least a quarter of new construction in Nepal, giving BFIs a rich opportunity to structure their mortgage loans in terms of equity requirement, interest rate, maturity, and repayment schedule in a manner that would incentivize borrowers to adopt disaster-safe construction practices, including the use of quality construction materials. However, Nepal Rastra Bank's current collateral policy and BFIs' practices give redundant security coverage over mortgage loans, such that incentivizing disaster-safe infrastructure on the financed property does not provide any additional security on the BFIs' loan portfolio. As a result, BFIs have not changed the terms of mortgage loans to protect their financial interest.

The insurance industry could provide another market-based instrument to incentivize homeowners and business establishments to adopt disaster-safe construction practices. However, a poor enabling environment has impeded the development of the insurance sector in Nepal. BFIs' requirement for insurance coverage on mortgage loans has driven the recent uptake of insurance coverage against natural disasters such as floods and earthquakes. The BFIs' mandated requirement for insurance coverage and the Insurance Board's administratively fixed insurance premium above actuarially fair rates resulted in the insurance companies' lack of any financial incentive and the flexibility to consider building quality factors, such as seismic resistance capacity, in pricing their products. As a result, insurance companies fail to provide financial incentives to encourage homeowners and business establishments to adopt disaster-safe construction practices.

The third factor that complements a good building design and quality construction materials to build disaster-safe infrastructure is the quality of services provided by contractors and the construction workers. The supply chain can only guarantee the quality of construction materials up to the point of last sale, and its contribution to disaster-safe infrastructure can be wasted if contractors and construction workers provide poor construction services. To allow the market to discipline the conduct of contractors and construction workers, customers must be able to differentiate between good and poor construction service providers through a certification mechanism that can be based on factors such as performance rating by past clients, building ratings of finished construction, as well as record of structural flaws and other building problems of completed construction projects. Such certification will connect service providers' quality of service and their revenue stream, allowing the market to reward good service and penalize poor service, thereby incentivizing good service performance.

Finally, homeowners and business establishments generate income from completed infrastructure, such as leasing the property (e.g., apartments), using the property for business (e.g., homestays and restaurants), and selling the property for profit. An infrastructure quality rating system can be developed to reflect construction features that contribute to disaster-safe infrastructure based on factors such as building design, quality of construction materials used, and the certification level of contractors and workers, as well as building seismic resistance capacity. This disaster-safety rating will connect the quality of the infrastructure and the ability of owners to generate a revenue stream from such property, allowing the market to reward quality infrastructure and penalize poor quality infrastructure, thereby incentivizing owners to demand for quality infrastructure. The section on DRM provides further detail on recommendations on strengthening NBSM's product testing and certification capacity, as well as market information systems, improving product handling practices, and certifying contractors and construction workers. The study also discusses how to create financial incentives to build stronger demand for

disaster-safe and resilient infrastructure including mortgage financing and insurance premiums based on infrastructure quality as well as tax incentives.

HEALTH: PHARMACEUTICAL SUPPLY CHAIN THAT DELIVERS EFFICACIOUS MEDICINES FOR A HEALTHY POPULATION

Nepal made considerable progress in improving the health status and raising the average life expectancy of its citizens. However, acute preventable childhood diseases, childbirth complications, nutritional disorders, sexually transmitted infections, as well as water, food and vector-borne diseases remain prevalent at high rates in Nepal. Addressing these health concerns requires an effective and efficient delivery of health services and efficacious pharmaceutical products. The study conducted a rapid assessment on the factors impeding investments in the pharmaceutical supply chain that created gaps in providing standard drugs and quality health services in the market, at the right quantity, place, time, and price. In addition, the study assessed the factors that hindered the development and widespread use of financial and insurance products that could improve access to good quality health products and services. This study used the Structure Conduct Performance framework.

The poor performance of the country's pharmaceutical supply chain has not only made it difficult to address the country's health concerns, the poor quality of pharmaceutical products raises the risk of treatment failures and adverse reactions, contributes to the development of drug resistance, and increases morbidity and mortality. Studies using laboratory analysis have shown that close to a third of the samples failed to meet quality standards, even including drugs listed under the essential drugs category by the Department of Drug Administration (DDA). In addition, the DDA's price control policy created counterproductive market results. For example, DDA set prices above market equilibrium price and failed to discipline suppliers of pharmaceutical products from practicing artificial product differentiation in marketing mostly generic products, allowing them to set prices that generated super-normal profits at the expense of consumers' access to affordable medicines. The combination of super-normal profits, easy financing through suppliers' credit, and lax DDA requirements also resulted in the proliferation of pharmacies, formal and informal, which created a regulatory challenge to enforce quality standards, good product handling practices, and standardized pricing in the market. In fact, studies reported large variations in prices in excess of 50 percent among drugs of different brands of the same generic active ingredients and mechanism of actions. In some cases, however, DDA set prices below cost, creating an artificial shortage of medicines in the market.

This poor performance emanates from failures in several levels of the pharmaceutical supply chain. First, GON agencies lack capacity to regulate the health sector. For example, the DDA serves as the principal agency for designing, implementing and monitoring the standards of pharmaceutical products. DDA standards exist but the lack of monitoring makes it difficult to ensure that standards are adhered to by agents in the supply chain. In addition, weak enforcement of proper product handling practices (e.g., transport and storage) of pharmacies results in significant degradation of product quality and compromises the therapeutic properties of medicines. Second, even if final consumers remain vigilant against sub-standard pharmaceutical products, they lack the competence in making such determinations and must be protected by the proper GON agencies and policies. However, GON agencies and policies fail to protect the interest of Nepali consumers. For example, suppliers co-mingle sub-standard pharmaceutical products in the market and do not practice standardized pricing. Suppliers practice

artificial product and price differentiation by working with prescribers whose lucrative remuneration raises the prices of pharmaceutical products at the retail market. In many cases, pharmacies dispense prescription medicines such as antibiotics even without a prescription. While practicing healthcare without a license is illegal in Nepal, weak monitoring of the Nepali health system encourages pharmacies to operate without licenses. A general lack of enforcement of the legislation covering the registration of pharmacies facilitates the inappropriate dispensing of drugs in Nepal. Another example, studies have found that the physical premise of many pharmacies failed to meet provisions in the good pharmacy practice requirements of Codes on Sales and Distribution of Drugs. In particular, studies found that pharmacies did not provide adequate storage space for different groups of drugs at required temperature range, thereby compromising the therapeutic properties of medicines as they move through the supply chain up to the point of last sale with final consumers. The DDA produced guidance on 'Good Pharmaceutical Practices' to alleviate this issue but this has hardly been implemented.

Finally, even with heightened awareness of the risk posed by sub-standard pharmaceutical products, the pharmaceutical supply chain lacks mechanisms to fully inform final consumers on product quality and prices, creating market inefficiencies such that the market fails to discipline agents to improve performance of the supply chain in an organic and systemic manner. Nepali consumers must be empowered with market information that will enable them to differentiate competing wholesale and retail distributors and exercise their purchase decision in such a manner that would impact their financial viability. As a result, this would influence their conduct in the market to adopt standardized pricing and address super-normal profits and to adopt good product handling practices to guarantee product quality. This ultimately should improve the performance of the entire pharmaceutical supply chain and contribute to promoting a healthy Nepali population.

Assistance from development partners is required in enhancing the technical capacity of DDA to strengthen the quality assurance mechanisms of the supply chain through collaboration with the private sector for technical capacity enhancement, strengthening the DDA and its staff in making testing facilities and procedures efficient and increased data management facilities. It will be important to coordinate with local governments and other agencies to fill the human resource gap and ensure support for implementation of good pharmaceutical practices. In addition, it will be critical to implement ethical prescribing guidelines, create an enabling environment for manufacturers to diversify their products, raise awareness among consumers, provide relevant market information and review the pricing mechanisms in the market.

While health insurance is a useful tool in creating a demand for strengthened quality assurance mechanisms in the health sector, the health insurance industry is nascent in Nepal, a country where private healthcare expenses, especially on pharmaceutical products, form the largest share. The insurance industry is heavily regulated, making it difficult for insurance companies to introduce innovative products. While the government-led health insurance schemes through the regulatory mechanisms of the Health Insurance Board and the Social Security Fund face constraints of inadequate services and limited budgetary support, the private sector-led health insurance policies are limited to accidental insurance.

There are new trends with BFIs that are coming out with various attractive deposit accounts bundled with attractive insurance features in partnership with insurance companies; however, the uptake of

insurance is not attractive. The government can partner with the private sector for effective implementation and success of its health insurance schemes and regulatory caps on insurance products should be removed to enhance the penetration and mainstreaming of actuarially fair insurance products in the market. In addition, insurance companies can incentivize policy holders to use pharmaceutical products from pharmacies that adopt good product handling practices by providing higher reimbursement rates on requests with supporting proof of purchase from certified pharmacies. Development partners can play a convening role in facilitating these relationships to develop.

EDUCATION: DEMAND FOR LEARNING AND PRODUCTIVITY GAINS IN THE ECONOMY

Over the past 15 years, Nepal made significant progress in educational outcomes, whereby net enrollment rate at the lower basic level exceeded 95 percent. In addition to successfully expanding access to education services for the Nepali people, the country also made modest progress in terms of the quality of education services, as suggested by some macro education indicators. For example, Nepal showed a faster increase in the expected years of schooling compared to its neighbors in the South Asia region. Furthermore, Nepal surpassed its neighbors in quality-adjusted years of schooling in 2018. In fact, the country even ranked higher than low-income and lower middle-income countries on education quality based on quality-adjusted years of schooling in USAID's journey to self-reliance metrics. However, such expansion of access to education has not produced the expected improvements in productivity, as evidenced by the poor performance of the economy over many decades. In fact, a Nepali agricultural worker's value-added production represents only 17 percent of the average in South Asia. Nepal also ranked 69th of 77 countries in terms of labor productivity (GDP per labor employed), which is the lowest in all of Asia.

The scope of this study focused on understanding private returns to education based on the Mincer Equation model, as a measure of the shadow price of human capital in Nepal. Furthermore, the study explored opportunities for private sector participation and investment in order to expand equitable access to quality education and to identify factors that impede those investments. The study used data from the Central Bureau of Statistics' Nepal Labor Force Survey (NLFS) 2017/18. Using a Mincer Equation model, the study estimated an average return to education for Nepal, which measures the wage premium received by workers for an additional year of schooling. In addition, the study estimated a return to education based on gender, vocational training, and quality of educational service, as well as marginal return at each level of educational attainment.

The analysis showed that Nepal's return to education has remained low for more than two decades, since it was first reported in 1998, and reached a record low in the study's current estimate of 6.13 percent. Nepal's average return to education of 8.8 percent ranks in the lowest 36 percent out of 97 reporting countries. Nepal's most recent return to education translates to an internal rate of return of only 7.9 percent for the entire working life of a Nepali worker, which fails to hurdle the 12 percent cost of capital, thereby making the investment to stay one more year in school an unprofitable financial proposition. Nepal's lack of market opportunities abroad, as well as its weak domestic economy has depressed the return to education, hence, lowering Nepali workers' propensity to acquire for learning. Based on the latest labor survey, only 21 percent of the Nepali workforce reached an educational attainment of secondary education and above.

Even under limited economic opportunities that depress the return to education and discourage the development of an effective demand for learning in Nepal, the study found the country's labor market to be efficient in providing the right market signals by rewarding better skilled workers with an additional wage premium above the average return to education. For example, the market rewarded workers with better quality education and those with an additional specialized skills training through TVET with a higher internal rate of return of 2.2 and 1.6 percentage points above the average rate of return. In addition, with a higher proportion pursuing education beyond the secondary level, the market rewarded female workers with a 0.7 percentage point higher rate of return compared to their male counterparts.

In addition, while the overall return to education in Nepal is depressed, the problem is more acute for workers with lower educational attainment - up to secondary education, while returns begin to accelerate at the bachelor's level, though still remaining below the cost of financing such investment. Workers receive the highest marginal return at the master's degree level, with a wage premium of 15 percent, while those with basic and secondary education receive the lowest wage premium of -4 percent and -1 percent. Workers[2] with a bachelor's degree receive a wage premium of 10 percent, which is higher than average but still fails to pay for the cost of such investment. The above-average wage premium for workers with higher educational attainment reflects the improving dynamism in the Information and Communication, BFIs and tourism sectors, which translates to a growing demand for mid to high-skill workers. Furthermore, the large number of international development agencies operating in Nepal may also have contributed to the stronger demand for high-skilled workers and the resulting higher wage premium.

While Nepal's depressed return to education has generally weakened workers' propensity to acquire for learning in the country, a certain segment of the population has revealed a strong willingness to pay for education services from foreign providers (i.e., studying abroad). Household expenditure for this purpose reached $470 million in 2018/19, which represents more than a third of the GON's entire budget for the education sector. International studies attribute this growing demand to students' expectation to find employment and earn the higher wages in host countries.

The study found anecdotal evidence demonstrating that private investment in public schools through public-private partnerships may significantly improve the performance of schools and students. However, such investments were constrained by low return on investments in public schools, lack of policies facilitating such investments, and high barriers faced by new entrants.

Nepal's low return to education is due to a weak demand from enterprises, which in turn is due to the country's weak economy. Therefore, efforts to improve the infrastructure of schooling - more schools, more teachers, more textbooks, and more access to all three – would need to be integrated as part of a wider and integrated initiative to stimulate economic activities through policy reforms that improve

[2] The negative returns to education for workers with an educational attainment below secondary education suggest that those workers must have been employed in sectors with broad skills requirement such that educational attainment is not the most important determining factor in job assignments, hence, wages and wage premia. These sectors may include agriculture, manufacturing, construction, and wholesale and retail trade, and accommodation and food service activities, which employs 7 of 10 workers in Nepal.

investment climate and the ease of doing business environment, as well as target investment in physical infrastructure. At the same time, Nepal can improve the quality of education by establishing a stronger accountability system with active participation of the government, parents and educational professionals. In addition, the GON and the donor community can help foster private sector participation in the education sector. This type of partnership can help inform schools on labor market and employment trends that will be useful in a) updating school curriculum, b) leveraging ICT to support non-traditional education service delivery systems, c) providing career guidance counselling for students, d) providing job placement services for graduates, and e) providing platforms to better match workforce skills and job market requirements. In particular, development partners can support the Public-Private Partnership (PPP) model and local universities to develop their educational programs by initiating collaboration with international universities. Most importantly, development partners can work with the GON to improve the policy regime governing private sector participation in the education sector. For example, the role of private sector associations, such as PABSON and NPABSON, needs to be examined so that they avoid working under the influence of private sector owners with vested interest, and, rather, work independently in favor of the education sector.

1.0 ASSESSMENT INTRODUCTION, STRUCTURE

1.1 ASSESSMENT PURPOSE

This assessment on private sector engagement is undertaken as part of the review process to develop a new Country Development Cooperation Strategy (CDCS) for the USAID for 2020 to 2025. Given USAID's renewed emphasis on deepening partnerships with the private sector and the efforts of the GON to increase the private sector's role in the economy, USAID/Nepal seeks to assess opportunities for private sector engagement (PSE) to provide market-based solutions to Nepal's development problems to support strategy and program design. The assessment is undertaken in the following contexts: a) federalization under a new constitution; b) continued out-migration and depopulation of rural areas; c) USAID's PSE Policy calling on missions to consider the potential role of the private sector in providing market-based solutions to development problems; and d) USAID's new overarching goal to continue supporting efforts that build self-reliance.

The objectives of this study are to: a) identify opportunities to engage with the private sector by assessing investment opportunities that could address development challenges; b) identify constraints that impede those investments by the private sector; and c) map the roles that USAID can potentially play to alleviate or eliminate those constraints.

1.2 ASSESSMENT QUESTIONS

The PSE study must answer the general questions called for in the new PSE Policy, as specified below, to facilitate an intentional shift in the new CDCS to adopt market-based approaches to accelerate Nepal's progress on the Journey to Self-Reliance.

- What factors are constraining the private sector from involvement and investment to address Nepal's development challenges in the following sectors – social, environmental and economic growth, health, education, democracy and governance, and disaster risk management?
- What role can USAID play to help alleviate or eliminate these constraints?
- How can the interest of vulnerable communities be better served through market-based approaches?

The general questions are translated at the sector level, as follows:

Social, Environmental and Economic Development Sector

- What factors hamper the ability of the agriculture value chain to provide competitively priced products in the domestic market, which resulted in the significant growth of agricultural imports over the last decade?
- What areas of reforms and their combinations, such as in labor productivity, power and transport costs, tariffs, trade facilitation services, exchange rate, can address those factors and improve the agriculture value chain's cost competitiveness in the domestic market and incentivize investment? How can these reforms be initiated and accelerated?

- How can Nepal expand the role of exports (merchandise and services) to incentivize investment and drive economic growth?
- What market approaches to natural resource management (e.g., the market for ecosystem services and tradable land, water, and pollution rights) have the potential to work in Nepal?
- What factors hamper the development of those market approaches to improve natural resource management?

Health Sector

- What factors impede investments in the health sector supply chain that created gaps in providing standard drugs and quality health services in the market, at the right quantity, place, time, and price?
- Does GON investment in health services crowd-out private sector investment?
- What hinders the development and widespread use of financial and insurance products that improve access to good quality health products and services?

Education Sector

- Is private return to education (i.e., wage/salary premium a Nepali receives from local and foreign employment by staying longer in school) remunerative enough to support an effective demand and incentivize private sector investment to expand and improve the quality of a) public education services (pre-primary - grade 12 and TVET) and b) private education services (pre-primary - grade 12 and TVET)?
- Are there opportunities for private sector participation and investment to expand equitable access to quality education, especially in the public school system (e.g., investment to support the public school system - with particular focus on primary grades and TVET, and investment to promote finance and delivery innovations)? What factors impede those investments?

Disaster Risk Management

- What factors impede investments in the construction material supply chain that created gaps in providing standard construction materials in the market, at the right quantity, place, time, and price?
- What hinders the development and widespread use of financial and insurance products that reduce disaster risk and improve people's ability to recover from disaster events that damage homes and public buildings?

Democracy and Governance

- Does the existing GON policy formulation process provide formal opportunities for the private sector to contribute to policies systematically? What hinders the private sector from engaging in proactive advocacy for pro-growth, business-friendly, and accountable governance policy reforms?
- Does the private sector have the capacity to advocate for policy reforms effectively? What policies does the private sector see as priorities for creating a favorable enabling environment? Are these in line with GON priorities?

- What opportunities exist for the private sector to facilitate (e.g., one-stop-shop) public services for the business community?
- What factors discourage or limit the ability of private sector actors in reaching out to vulnerable communities? How can development programs incentivize the private sector to benefit those communities?

1.3 REPORT ORGANIZATION AND APPROACH

This assessment is composed of eight sub-studies across sectors and is organized into five sections. The first section addresses the cross-cutting issues of economic growth diagnostics, as well as democracy and governance. The second section is from the Social, Environmental, and Economic Development (SEED) Office and is made up of three sub-studies covering trade (export opportunity and product space), agricultural price competitiveness, and natural resources. The third section covers construction supply chain, financing and disaster insurance products, followed by pharmaceutical supply chain and insurance products. The last section covers returns to education.

Since the methodologies for each sub-section are different and complex, the relevant questions, methodologies, and methods are presented by section to make them easier to follow. These sub-studies are defined according to a scope of work (Appendix 1) to narrow the otherwise broad subject matter. The assessment's Scope of Work (SOW) did not include a review of the donor landscape, generally, or USAID's portfolio and strengths, specifically. Recommendations, therefore, are made at the country level with selected references to potential donor roles generally without delving into USAID strategy specifically. Appendices are organized so that all reference materials for each sub-study are found in a single unified appendix.

2.0 CROSS-CUTTING ISSUES

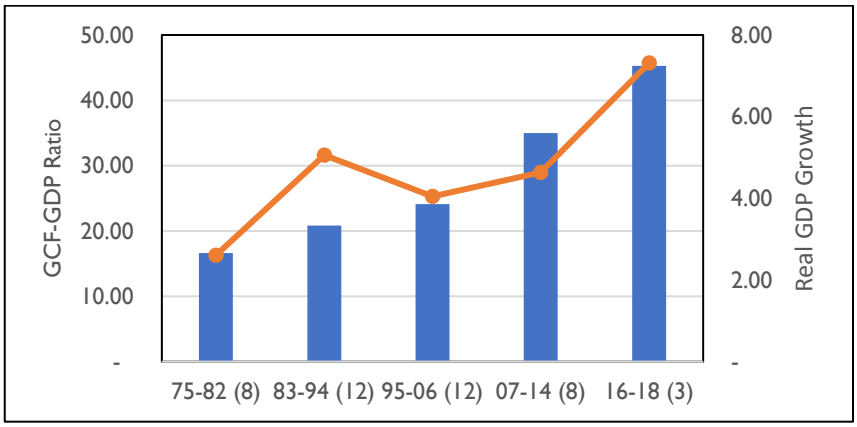
2.1 BINDING CONSTRAINTS TO ECONOMIC GROWTH IN NEPAL

Abundant evidence shows the critical role of investment in launching countries to a transformational growth trajectory. Countries that demonstrated transformational growth, such as South Korea, Thailand, and more recently, Vietnam, displayed five common features: acceleration of investment, expansion of export, growing complexity of export basket, exponential growth in per capita income, and rapid decline in population growth. No country that ever developed failed to have these features.

First, at the center of the economic transformation is the acceleration of investment, which doubled in many countries and was sustained over a decade and happened as countries increasingly oriented their economies to the world market, such that the export-to-GDP ratio approached 100 percent. Second, the expansion of export was accompanied by a structural transformation in the country's productive capability, where these countries exported increasingly more complex products (e.g., chemicals, electronics, machinery and equipment) that are associated with high productivity and high wages. Third, the virtuous cycle of investment that enabled countries to be competitive, allowing them to create and expand export opportunities, which in turn further incentivized investment, also provided the mutually reinforcing economic logic and dynamics that brought about the country's economic transformation. Fourth and last, as a result, those countries experienced exponential growth in per capita income and a rapid decline in the population growth rates. In addition, during this transformation period, households increased investment in education and health, to better position household members to connect and appropriate benefits from the new economic opportunities created by growth. Such investment in human capital consolidated and sustained the country's economic gains.

Nepal's gross capital formation (GCF) record in Figure 1 shows a dramatic increase from below 10 percent of GDP in 1965-1975 to 62 percent in 2019, with five periods of substantial increase over more than five decades. Coinciding with the establishment of the global Multi-Fiber Agreement (MFA), which lasted from 1974 to 2004, Nepal's GCF rate doubled to 20 percent and was maintained for two decades until 1994. From 1995 to 2005, Nepal's GCF rate increased by another 5 percentage points to 25 percent. The MFA provided the boost in demand that stimulated the growth in investment in the country. In fact, in 1995, textile exports accounted for 77 percent of Nepal's merchandise exports. However, such demand produced only a long-run trend growth of 4.1 percent over a three-decade period.

Figure 1: Nepal Gross Capital Formation and Real GDP Growth Rate



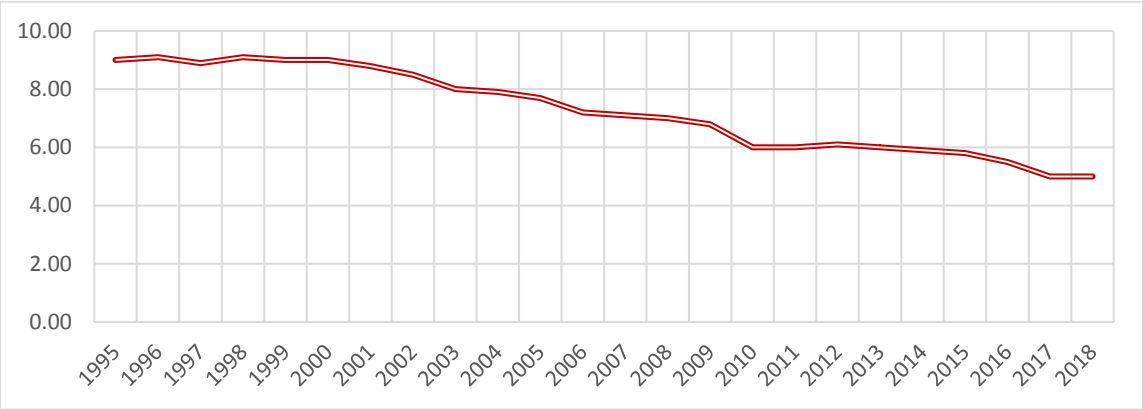
Source: IMF and the WB.

At the end of the MFA in 2004, the textile sector continued to decline, such that by 2017, textile exports dropped from 77 percent to only 43 percent of Nepal's merchandise exports. As Nepali workers anticipated MFA's impending end, they started as early as 2002 to seek employment abroad, which quadrupled the current transfers account (mostly workers' remittances) in the balance of payments during this year. Since then, the current transfer grew annually by 21 percent over a decade. The growth in the current transfer slowed down to 5 percent in the post-earthquake period.

Even after the MFA ended, Nepal's GCF rate continued to grow, approaching 35 percent in 2014. However, this growth in GCF did not translate into significant growth in real GDP (Figures 2 and 3). The long-term trend growth increased only to 4.34 percent, an increase of 0.21 percentage points. Part of the reason is that the economy entered a remittance driven consumption, which served as the primary driver of growth in the economy.

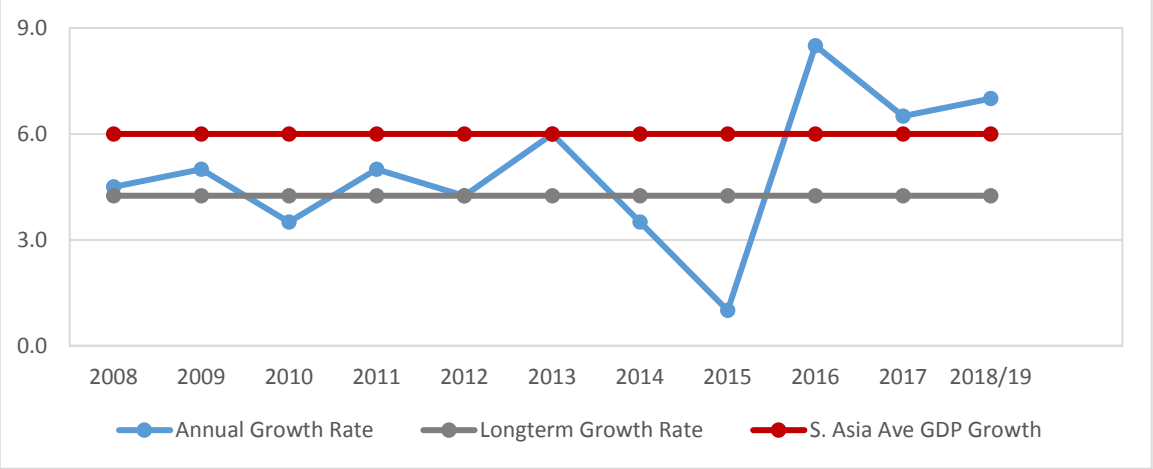
As consumption demand grew, Nepali enterprises' business model depended on the availability of inventory of products to ensure uninterrupted operation. As a result, the largest component in the growth of GCF was in the form of "change in stock," and not private fixed capital investment (Table 1). It is the latter type of investment that contributes to aggregate demand, as well as expands the economy's productive capacity. The change in stocks only contributes to an increase in aggregate demand but not to productive capacity. Moreover, when imports supply those stocks, then even the impact on aggregate demand is canceled. It is for this reason that Nepal's high GCF rate before the earthquake did not translate to higher real GDP growth. Between 2000 to 2014, Nepal's gross capital formation increased by 19 percentage points, of which 15 percentage points were contributed by stock change, and only 4 percentage points were contributed by private fixed capital formation. Public fixed capital formation contributed to only a small increase of 0.7 percentage points. During this period, the change in stock increased by NPR 332 billion, but its impact on aggregate demand was more than offset by the NPR 653 billion increase in imports.

Figure 2: Real GDP Growth Rate, Nepal 1995 to 2018



Source: Nepal Rastra Bank.

Figure 3: Real GDP Growth Rate, Nepal and South Asia (in percent)



Source: Nepal Rastra Bank.

Table 1. Gross Capital Formation

Investment	Pre-earthquake Long-term Trend*	Post-earthquake**	Difference
Gross Capital Formation	35%	59%	24%
GON Fixed Capital Formation	5%	8%	4%
Private Fixed Capital Formation	17%	28%	10%
Change in Stock	16%	23%	10%

* Average for the period 2000/01 to 2013/14
** Average for the period 2017/18 to 2018/19
Source: Nepal Rastra Bank.

In the post-earthquake period, Nepal's GCF reached 55 percent of GDP, which is among the highest rate of investment in the world. It is only in this period when such a rise in GCF rate also created an acceleration in economic growth to 7.3 percent, which now exceeds the growth rate of its regional neighbors by 1.4 percentage points. This rapid growth was driven both by the acceleration of gross capital formation, of which the increase in the gross private capital formation contributed 10 percentage points. Unlike stock change, private fixed capital formation (e.g., reconstruction) is largely a non-tradable good that cannot be substituted by imports. Hence, it expands domestic demand and stimulates growth.

A confluence of demand and supply factors converged to allow Nepal to reach a rapid rate of economic growth in the post-earthquake period. The reconstruction activities to rebuild damaged houses, commercial buildings, and public infrastructure, which were estimated to have reached $7 billion, provided the boost in aggregate demand that fueled growth. At the same time, improvements in the supply of electricity and some improvements in road infrastructure increased social returns to investment. Furthermore, the growing political stability (such as the ratification of a new constitution, election of a majority party in government, and successful transition to a federal form of government)

lowered the uncertainty in policy implementation, as well as new labor laws that improved labor relations, both combined to increase the ability of private investors to retain a larger share of returns. As private returns to economic activities increased, private investors accelerated their investments, which enabled the country to achieve rapid growth.[3]

This study reviews the binding constraints identified by the ADB and MCC growth diagnostic analyses (which covered the pre-earthquake period), assesses whether those constraints remain and new constraints have emerged in the post-earthquake period, and assesses whether the recent rapid growth is sustainable in the long run.

2.1.1 Methodology and Limitations

2.1.1.1 Methodology

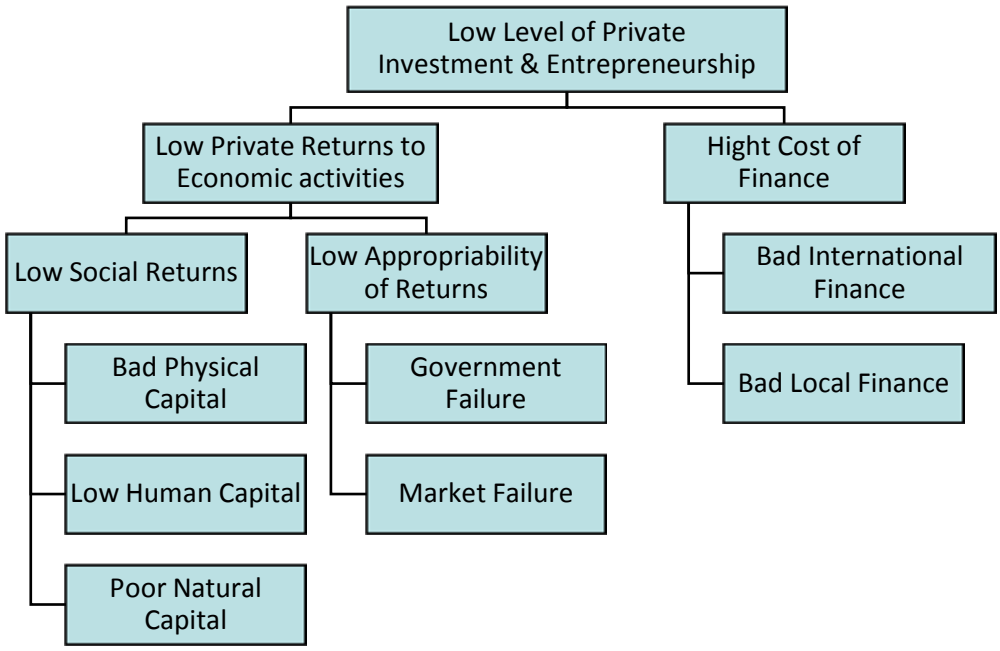
This study uses the Growth Diagnostic (GD) framework, a methodology developed by Hausmann, Rodrik, and Velasco (HRV), to uncover the binding constraints that have impeded investment and economic growth in Nepal.[4] The GD framework emphasizes the vital linkage between private investment and economic growth, as well as aims to identify the areas that are currently the largest deterrent to private investment.

The GD framework is based on a standard theory of economic growth that includes the household, firms, and government sectors. The framework derives the optimal decision rules of the three covered sectors and solves the model for a balanced growth path of investment and consumption. The model includes all the factors that influence investment, which is organized in a decision tree structure in Figure 4. The study identified the binding constraints to investment in Nepal by carrying out a sequential determination following the decision tree structure. At the highest level, the decision tree directly corresponds to real world investment decisions where investment is not allowed to proceed when the rate of private return does not hurdle above the cost of finance. Since two variables are compared in relative terms, further analysis is needed to determine whether this is due to the high cost of finance or low private return. If the latter, the decision tree attributes low private return to low social return or low appropriability – that is, a low expectation to retain the return. At the next level down, the decision tree identifies the factors that contribute to low social return (bad infrastructure, low human capital, poor geography), low appropriability (government failure and market failure), and high cost of finance (bad local and bad international finance). HRV's four diagnostic tests (questions) serve to differentiate whether a factor is a binding constraint to investment. These diagnostic tests include:

[3] It is noted that the post-earthquake average growth in agriculture of 4.3 percent exceeded the previous average of 2.6 percent. Agriculture contributes 33 percent share of the national GDP.

[4] Hausmann, R., Rodrik, D. and Velasco, A (2005). "Growth Diagnostics." John F. Kennedy School of Government, Harvard University (Cambridge, Massachusetts). Retrieved from http://ksghome.harvard.edu/~drodrik/barcelonafinalmarch2005.pdf

Figure 4: HRV Growth Diagnostic Tree



Source: Hausmann, Rodrik, Velasco 2005.

- ***Is the (shadow) price of the constraint high?*** A relatively high price is indicative of high demand relative to supply. For example, a high demand for a factor such as capital (e.g., savings) will exert an upward pressure on the price of capital via the interest rate.
- ***Do movements in the constraint produce significant movements in the objective function?*** Increasing supply of a potential constraint and observing an increase in a related outcome variable is indicative of pent-up demand. In other words, change in any constraints (like savings) should influence major economic indicators (like GDP).
- ***Are actors in the economy attempting to overcome or bypass the constraint?*** If supply is limited but demand is high, economic actors (companies or individuals) will attempt to find alternative ways to access the economic factor. For example, if low human capital (such as a limited skilled workforce) has become a binding constraint that reduced the social return on investment, one would expect that enterprises may outbid each other by paying a higher wage premium, increasingly engage in internal workforce training and or hire foreign workers.
- ***Are agents less (more) intensive in the constraint more (less) likely to survive and thrive?*** As enterprises face higher prices of factors that have become binding constraints, such as the higher price of capital (i.e., interest rate), they will substitute the relatively expensive factor with the cheaper factor (e.g., labor). Enterprises successful in this type of adjustment (i.e., higher labor intensity) will likely survive and thrive in the economy.

2.1.1.2 Limitations

Since this is a rapid assessment to identify the major constraints for private sector investment and economic growth of Nepal, the study is primarily based on secondary literature published by institutions, such as the ADB, the International Monetary Fund (IMF), USAID, and the World Bank. The methodology focuses exclusively on economic growth. The model assumes that increasing the economic growth rate is the central challenge that a developing nation faces. Thus, as a result, the approach places less attention to other instruments and policy objectives of the government, such as income distribution, environmental protection, and basic human needs.

2.1.2 Findings

The ADB and MCC growth diagnostic studies attributed the low level of private fixed capital formation (i.e., private investment) and slow economic growth to limited investment opportunities with the remunerative level of return to private investment, and not to the high cost of finance. The decision tree in Figure 5 attributed the low private returns to low social returns due to poor infrastructure and the low likelihood of retaining the returns on investment due to government failure as manifested by uncertainty in policy implementation and challenging industrial labor relations. The binding constraints in Figure 5 appear with a red background.

This section reviews the evidence provided by the ADB and MCC studies to determine the binding constraints impeding investment and growth in Nepal. Also, this section presents additional and more recent evidence to support the earlier studies, to assess emerging constraints, and to evaluate the persistence of these constraints by characterizing the likely trajectory of the economy.

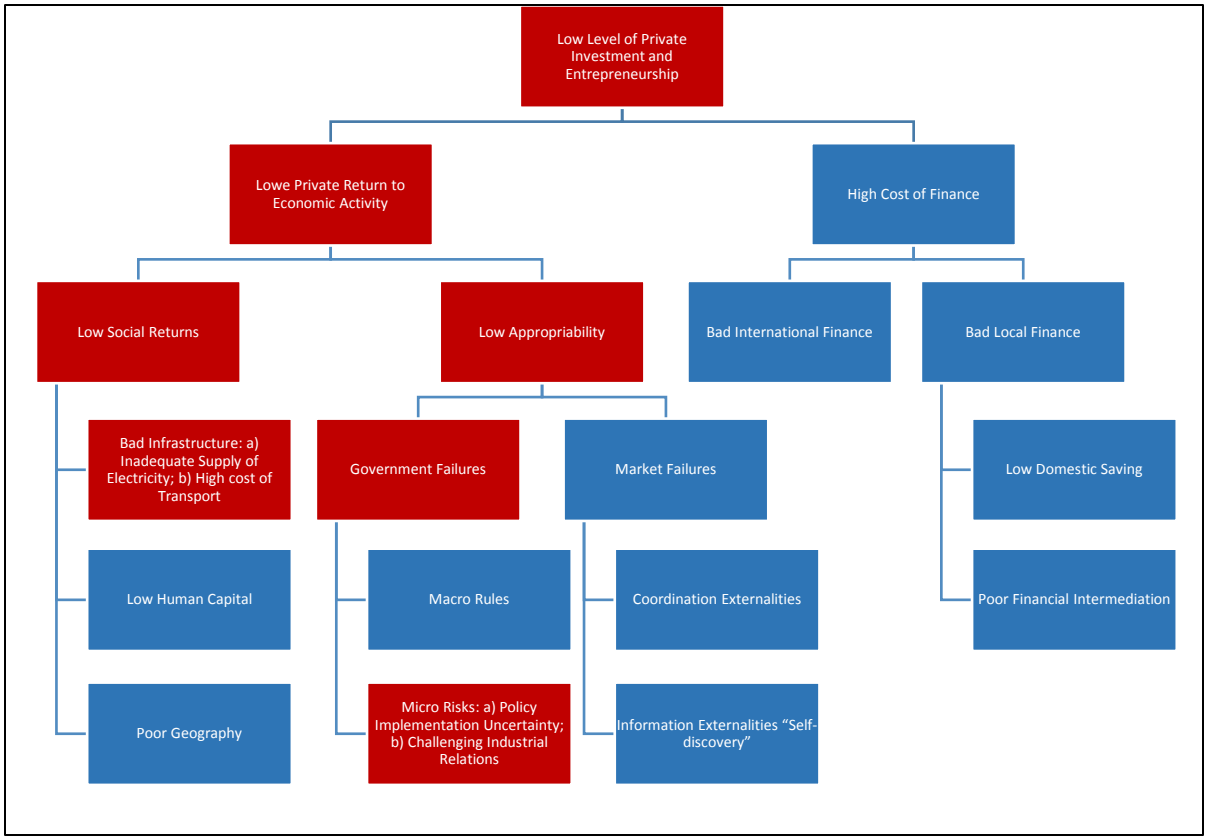
2.1.2.1 Private Returns to Economic Activity

The HRV decision tree attributes a low private return to low social return and low likelihood of retaining those returns by the private investor.

2.1.2.2 Social Returns

An investment in economic activity will require the use of factors of production that can be categorized into physical capital (e.g., infrastructure), human capital (e.g., number and skills of the workforce), and natural capital (e.g., geography). A strong demand for these factors, coupled with a limited supply, will exert an upward pressure on their prices and result in a depressed social return to economic activities, hence constraining investment.

Figure 5: Binding Constraints to Private Investment and Economic Growth (Pre-earthquake)



Source: MCC Nepal Growth Diagnostics Study.

A. Natural Capital: Mixed Result, but Not a Binding Constraint

Nepal is a country with varied topography from lowland and forested plains, to steep mountainous terrain. Natural capital in the form of geography, climate, and natural resources can have a significant impact on economic growth and can act as an opportunity or a binding constraint to growth.[5] Earlier studies determined that natural capital is not a binding constraint to Nepal's economic growth, though it can impose a higher cost in terms of infrastructure requirement. This section examines the role of Nepal's natural capital in creating economic opportunities, as well as in imposing a higher cost on economic activities in the country.

Landlocked location: Landlocked between India and China, Nepal does not have direct access to seaports. This imposes a higher cost of doing business in the country due to the high cost of freight services.[6] For example, it is reported that the cost of imports [cost of insurance and

[5] Millennium Challenge Corporation (2014). Nepal Growth Diasnostic. Kathmandu, Nepal. Retrieved from https://assets.mcc.gov/content/uploads/2017/05/Nepal_CA_withCover.pdf.

[6] Raballand, G., Arvis, J.F., and Marteau, J.F. (2007). The Cost of Being Landlocked: Logistics Costs and Supply Chain Reliability. World Bank Policy Research, World Bank. Retrieved from

freight (CIF)] and exports [free on board (FOB)][7] are higher by 50 percent in landlocked countries compared to those with access to a seaport.[8]

The MCC report highlighted an additional economic challenge on Nepal's landlocked location as the country's access to critical infrastructure may be affected by its geopolitical relation with neighboring countries.[9] In 2015, due to geopolitical differences, India denied access to the port and imposed an artificial blockage[10] on the border to restrict the movements of goods, raising the price level in Nepal by 3 percentage points above normal level. This demonstrated how Nepal's landlocked location created a dependency on India to access critical infrastructure and avoid major interruptions in economic activities. During this period, China allowed Nepal to use seven Chinese ports,[11] but access to those ports is costly due to poor road infrastructure and distances.[12] In addition, anecdotal evidence shows that the bureaucratic hassles in the Kolkata port slow the shipping process, thereby increasing the cost by up to 20 percent.

B. ***Topographic diversity:*** Nepal is divided into three zones based on topography – the mountain, mid-hills, and Terai (southern plains). Mountain and mid-hills together represent 83 percent of the country's total land area and Terai represents 17 percent.[13] Extreme geographical terrain, such as the drastic change in elevation over a short distance, has been a challenge for Nepal.[14] The high cost of road construction, which according to claims, can increase by up to 300 percent, contributed to the country's poor infrastructure development.[15]

C. ***Arable land:*** Nepal's total land area is 147,189 sq. km, and approximately 28 percent is agricultural land. The ratio of arable land (to the total land) is only 15 percent, which is one of

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http://documents.worldbank.org/curated/en/620801468168857019/The-cost-of-being-landlocked-logistics-costs-and-supply-chain-reliability.

[7]CIF and FOB are terms of trade, where in CIF is Cost Insurance and Freight and FOB is Free on Board.
Adkins, W. (29 January 2019). "What Is the Difference Between CIF & FOB?" Small Business - Chron.com, http://smallbusiness.chron.com/difference-between-cif-fob-39152.html.

[8] Raballand, G., Arvis, J.F., and Marteau, J.F. (2007). The Cost of Being Landlocked: Logistics Costs and Supply Chain Reliability. World Bank Policy Research, World Bank. Retrieved from http://documents.worldbank.org/curated/en/620801468168857019/The-cost-of-being-landlocked-logistics-costs-and-supply-chain-reliability.

[9] Millennium Challenge Corporation (2014). Nepal Growth Diasnostic. Kathmandu, Nepal. Retrieved from https://assets.mcc.gov/content/uploads/2017/05/Nepal_CA_withCover.pdf.

[10] UN specifies that "Land-locked countries shall have right of access to and from the sea and land-locked states shall enjoy freedom of transit through the territory of transit states by all means of transport".
Bayeh, E. Social Science (2015). The Right of Land-Locked States in the International Law: The Role of Bilateral/Multilateral Agreements. Science Publishing Group.

[11] Seven ports include four seaports--Tianjin, Shenzhen, Lianyungang, and Zhanjiang – and three dry ports – Lanzhou, Lhasa, and Xigatse.
Nayak, R.N. Nepal-China Transit Agreement Depth Analysis. Kathmandu: Spotlight (October 3, 2018). Retrieved from https://www.spotlightnepal.com/2018/10/03/nepal-china-transit-agreement-depth-analysis/.

[12] Rajagopalan, R. P. (2018). "Why Nepal's Access to China Ports Matters?" The Diplomat. Retrieved from https://thediplomat.com/2018/09/why-nepals-access-to-china-ports-matters/.

[13] Khadka, K. (2010). Land and Natural Resources: Central Issues in the Peace and Democratisation Process in Nepal. Economic Journal of Development Issues. Vol. 11 and 12, No 1-2.

[14] World Bank (2018). Nepal Systematic Country Diagnostic. World Bank Group.

[15] Millennium Challenge Corporation (2014). Nepal Growth Diasnostic. Kathmandu, Nepal. Retrieved from https://assets.mcc.gov/content/uploads/2017/05/Nepal_CA_withCover.pdf.

the lowest in South Asia.[16] The 2014 MCC report states that smaller land areas and increasing population size resulted in more niche and fragmented landholdings.[17] In fact, 52.7 percent of Nepal's land holdings were less than half a hectare, compared to 40.1 percent in 1995. The report further highlighted that such land fragmentation has adversely impacted the productivity and economies of scale, making land a challenging factor to the economy. However, several considerations provide evidence that it is not a binding constraint yet.

First, the growing underutilization of agricultural land suggests that land is not yet a binding constraint. In some areas, such as in the Kaski district, more than 30 percent of the land was abandoned due to rapid urbanization and migration. With the improvement in urban services and amenities, many people migrated permanently from the mid-hills, abandoning farmlands.[18] Another study asserts that the outmigration of Nepali farmers magnified the problem of underutilization of productive land.[19] Second, HRV's third diagnostic test determines a binding constraint when actors in the economy attempt to overcome or bypass the limited supply of land. However, land-substituting technologies such as high-yielding varieties and improved farm production practices (e.g., soil fertility management) have not yet been widely adopted by agricultural producers in Nepal, to raise the yield per unit of land. Nepal ranks low in the world in terms of yield in almost all agricultural products produced in the country. Furthermore, land aggregation arrangements that exploit economies of scale have not emerged in the country. In addition, HRV's fourth diagnostic test determines land as a binding constraint when actors more intensive in land are less likely to survive and thrive. However, agriculture, the most land-intensive sector, continues to contribute the largest share in the economy at 33 percent (i.e., the agriculture sector survives and thrives). The sector that comes closest in second place – wholesale and retail trade – contributed only 13 percent to the economy. Although the high price of land in Nepal may suggest that it is a binding constraint based on HRV's first diagnostic test, land price is artificially bid up as much of the land is locked up as collateral, where land and buildings represent 72 percent of total asset that guarantee loans in the banking sector.

D. ***Water resources****:* Nepal has abundant water resources that can be tapped for hydropower production to make the country among the highest in the world in terms of per capita hydropower production capacity. The estimated power potential is 83 GW, while the economically feasible potential was evaluated to be approximately 43 GW. Due to the difficult terrain and poor investment climate, the development of hydropower remains a challenge, and hydropower potential remains significantly underdeveloped.[20] Nepal is one of the most vulnerable countries to climate change, such as water-induced disasters and hydro-

[16] World Bank Data Indicators (2019). Country Specific Nepal. World Bank Group.
[17] Millennium Challenge Corporation (2014). Nepal Growth Diasnostic. Kathmandu, Nepal. Retrieved from https://assets.mcc.gov/content/uploads/2017/05/Nepal_CA_withCover.pdf.
[18] Thapa, P.B. (2001). "Land-use/Land Cover Change with Focus on Land Abandonment in Middle Hills of Nepal: A Case Study of Thumki VDC, Kaski District" [master's dissertation]. Kirtipur, Nepal: Tribhuvan University.
[19] Paudel, K., Tamang, S., and Shrestha, K. (October 2014). Transforming Land and Livelihood: Analysis of Agricultural Land Abandonment in the Mid Hills of Nepal. Journal of Forest and Livelihood, 12(1). Retrieved from https://www.forestaction.org/app/webroot/vendor/tinymce/editor/plugins/filemanager/files/JFL%20VOl%2012%20%281%29/Paudel%20et%20al.pdf.
[20] Adhikari, D. (2006). Hydropower Development in Nepal. Nepal Rastra Bank.

meteorological extreme events.[21] The Nepal Second National Communication 2014[22] described an increasingly adverse impact of climate change on the energy sector (mainly hydropower). It is estimated that the economic costs of climate change in hydropower, agriculture, and water-induced disasters could be 2 to 3 percent of current GDP/year by mid-century.[23] More efficient use of water for irrigation could help to reduce the volatility of agricultural productivity that results from dependence on rain fed cropping, particularly given changing precipitation patterns as a result of climate change.

E. ***Tourism and natural beauty:*** Nepal has always been synonymous with natural beauty and tourism. The Himalayas, along with the religious and cultural attractions, provide great natural beauty and tourism opportunities. Despite being a promising sector, the tourism industry was unable to achieve significant growth as compared to other countries in the region. The contribution of the tourism industry to GDP from 2010-2018 hovered at around 8 percent,[24] as compared to approximately around 10 percent in India. Poor infrastructure, including airports, hotels, and roads, constrained the development of Nepal's tourism sector.[25]

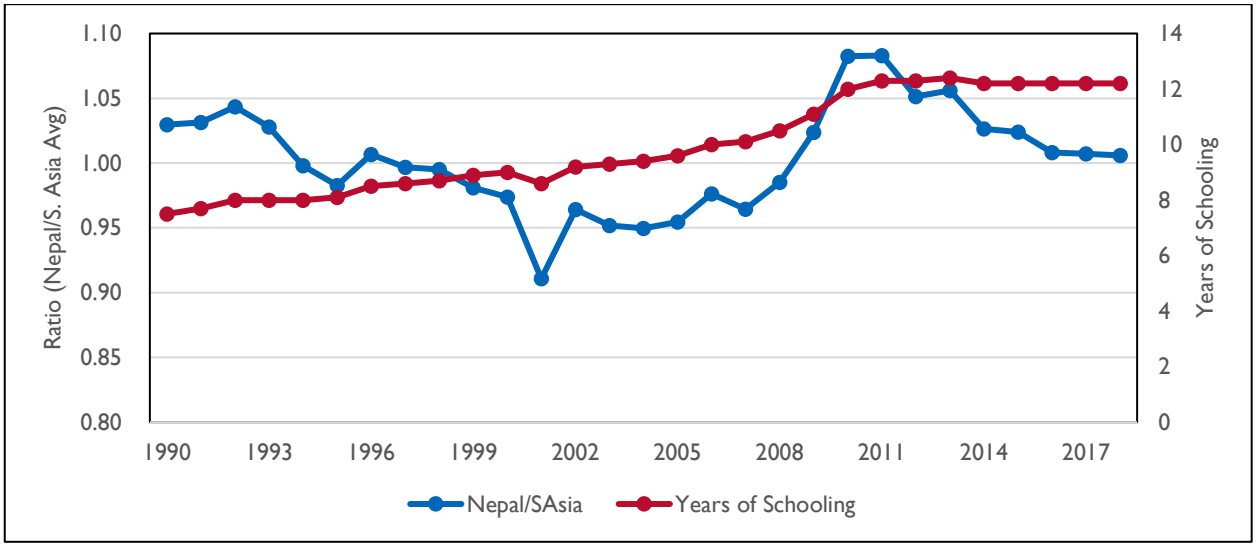
[21] Ministry of Environment (2010). Nepal National Adaptation Programme of Action. Kathmandu, Nepal: National Planning Commission, Ministry of Environment.
[22] Ministry of Science, Technology and Environment, (2014). Nepal Second National Communication to United Nations Framework Convention on Climate Change. Kathmandu, Nepal. Retrieved from https://unfccc.int/resource/docs/natc/nplnc2.pdf
[23] Bhatt, R.P. (2017). "Hydropower Development in Nepal - Climate Change, Impacts and Implications." IntechOpen. Kathmandu, Nepal.
[24] World Data Atlas (2018). Nepal - Contribution of Travel and Tourism to GDP as a Share of GDP. Retrieved from https://knoema.com/atlas/Nepal/topics/Tourism/Travel-and-Tourism-Total-Contribution-to-GDP/Contribution-of-travel-and-tourism-to-GDP-percent-of-GDP.
[25] Giri, T. (2018). Visit Nepal 2020: The Infrastructure Challenge. New Business Age. Retrieved from https://www.newbusinessage.com/MagazineArticles/view/2308.

F. Human Capital: Not a Binding Constraint

Human capital is the stock of skills possessed by a country's workforce that is combined with other factors of production to create value and wealth.[26,27] The 2014 MCC and 2018 World Bank studies concluded that human capital is not a binding constraint on investment and growth in Nepal.[28,29] Recent labor market signals, such as the low shadow price[30] of human capital, low return to education and the excess supply of labor evident by the high unemployment, underemployment, and migration provide very strong evidence on the first HRV diagnostic test that human capital is still not a binding constraint to investment and growth in Nepal.

1. ***Literacy rate:*** Nepal's education sector performed reasonably well when compared to other countries on several common macro indicators. For example, the country's adult literacy rate increased to 63.9 percent (male's 76.4 percent and female's 53.1 percent). In addition, Nepal also showed a faster increase in the expected years of schooling compared to its neighbors in the South Asia region. After lagging behind its neighbors in expected years of schooling for a decade, from 1998 to 2008, Nepal accelerated its gain and exceeded its neighbors beginning in 2009 and maintained such an advantage until the present period. Figure 6 shows the average years of schooling in Nepal in red with the ratio between Nepal and the rest of South Asia in blue, with the ratio increasing above 1 in 2009.

Figure 6: Expected Years of Schooling



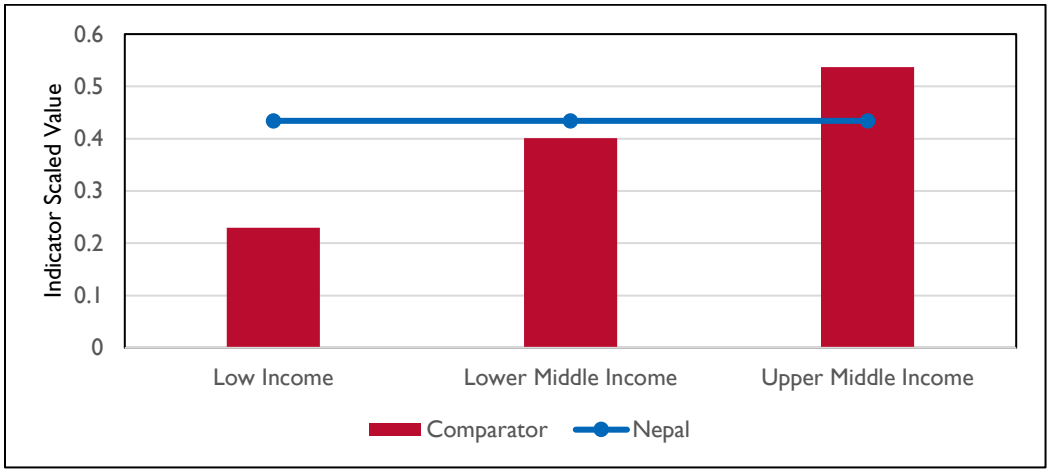
Source: United Nations, Human Development Index.

[26] Goldin C. (2016). "Human Capital." Handbook of Cliometrics. Heidelberg, Germany: Springer Verlag. Retrieved from https://scholar.harvard.edu/files/goldin/files/goldin_human_capital.pdf.
[27] UN (2018). World Economic Situation and Prospects 2018. UN, New York. Retrieved from https://read.un-ilibrary.org/economic-and-social-development/world-economic-situation-and-prospects-2018_02486bd4-en#page1. .
[28] Millennium Challenge Corporation (2014). Nepal Growth Diasnostic. Kathmandu, Nepal. Retrieved from https://assets.mcc.gov/content/uploads/2017/05/Nepal_CA_withCover.pdf.
[29] World Bank (2018). Nepal Systematic Country Diagnostic. Washington, DC: World Bank Group.
[30] A shadow price is a monetary value assigned to currently unknowable or difficult-to-calculate costs in the absence of correct market prices.

Although the quality of education in Nepal has been suspected to be sub-standard, the country scored higher in the Journey to Self-Reliance (J2SR) indicator on the quality of education (i.e., quality-adjusted years of schooling) compared to the average for low-income and lower-middle-income countries [blue line Nepal, red bar comparator countries (Figure 7)].

In the context of Nepal, skills mismatch is not a binding constraint. Based on the HRV growth diagnostic test number 3, when actors in the economy encounter a constraint they would always attempt to overcome or bypass the constraint. In this case, both enterprises and the unemployed would explore job search mechanisms that would result in a better match in skills, such as job-search platforms where job-seekers can post their resume and where enterprises can announce job openings. In fact, the 2017/18 NLFS[31] reports that the majority (57 percent) of job seekers still depend on relatives and friends for information on job openings. In addition, close to four-fifths (79 percent) of Nepal's employed workforce reached below secondary education only, and are employed in non-skill intensive sectors, such as agriculture, wholesale and retail trade, light manufacturing, and accommodation and food service activities, which account for 73 percent of total employment in the country. Such an economy would not require a high degree of precision in matching skills in a way that would make skills mismatch a binding constraint. Furthermore, the World Bank Enterprise Survey reported that only 9.1 percent of Nepali firms identified an inadequately educated workforce as a major constraint to their operations, while the average in the world is more than double that proportion at 23.3 percent.[32]

Figure 7: J2SR Indicator on Quality of Education

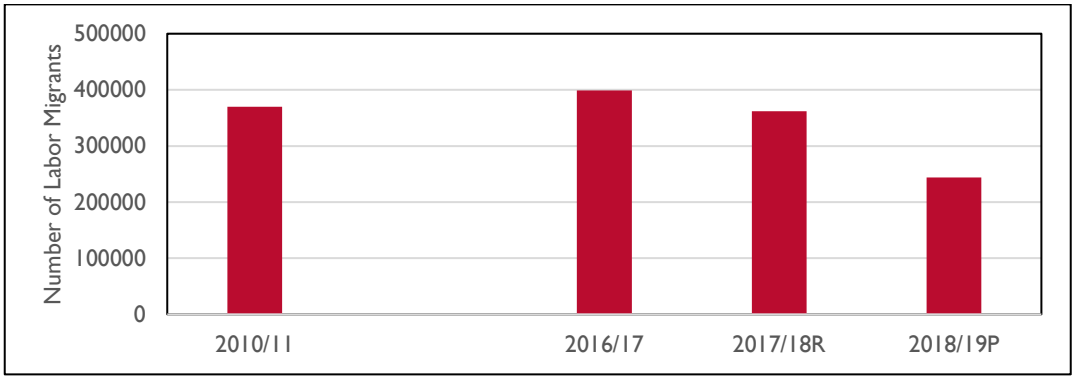


Source: USAID J2SR Database.

[31] Central Bureau of Statistics - National Planning Commission, Government of Nepal (2019). *Nepal Labour Force Survey 2017-2018, Government of Nepal.* Kathmandu, Nepal: International Labour Organization.
[32] Enterprise Surveys (http://www.enterprisesurveys.org), The World Bank.

2. ***Unemployment and migration:*** Unemployment and labor migration data indicate an excess supply of labor in the market. According to the Nepal Labor Force Survey (NLFS),[33] the unemployment rate[34] in Nepal is 11.4 percent (10.3 percent for males and 13.1 percent for females).[35] According to the same survey, workers with secondary education posted the highest unemployment rate at 15.2 percent, followed by workers with lower educational attainment at 11 percent, and those with tertiary education had 8.4 percent unemployment. In addition, a 2018 World Bank report estimated that 28 percent of the Nepali workforce is working abroad. The number of workers migrating to seek employment abroad remains high, reaching 363,000 in 2017/18, which is close to the estimated 378,000 new entrants in the labor market (Figure 8), which suggests a limited net job creation in the country.

Figure 8: Number of Nepalis Migrating for Work Abroad

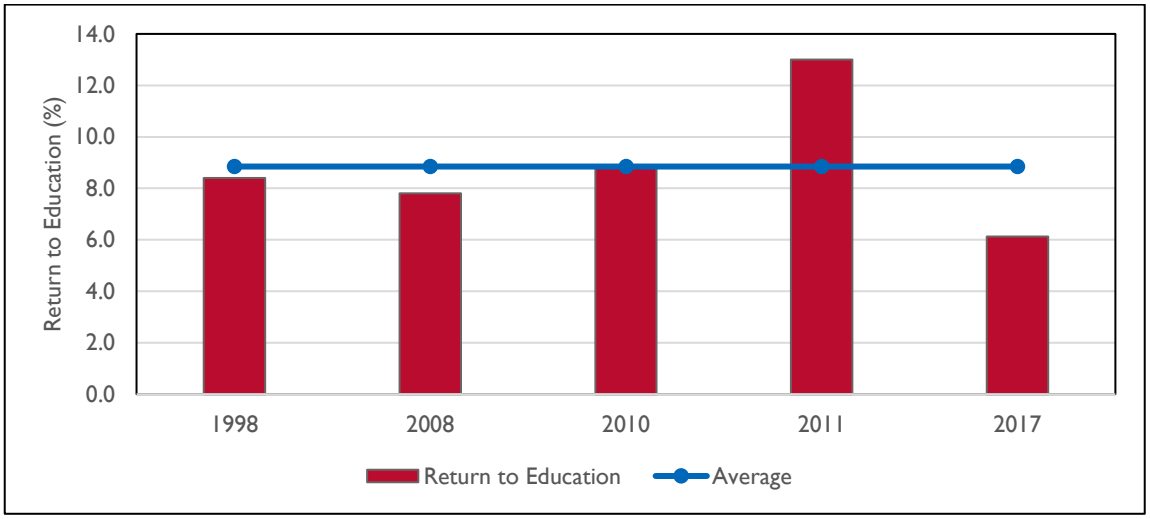


Source: Nepal Rastra Bank.
Note: 2012 to 2015 not included.

3. ***Returns to education:*** The shadow price of human capital, which is measured in terms of return to education, is low, suggesting that enterprises in Nepal are not outbidding each other to secure a limited supply of human capital resources in the market. With an 8.8 percent average return to education, Nepal ranked in the lowest 36 percent of 97 countries in the world. Even with the increase in the return to education in 2011 to 13 percent, the MCC study still concluded that human resources were not a binding constraint to investment and growth (Figures 9 and 10).

[33] Central Bureau of Statistics - National Planning Commission, Government of Nepal (2019). Nepal Labour Force Survey 2017-2018, Government of Nepal. Kathmandu, Nepal: International Labour Organization.
[34] Unemployment rate could be masked by a high under-employment rate, informal employment, disguise unemployment and not gainful employment.
[35] World Bank (2014). World Development Indicators 2014. Washington, DC: World Bank Group. Retrieved from https://openknowledge.worldbank.org/handle/10986/18237.

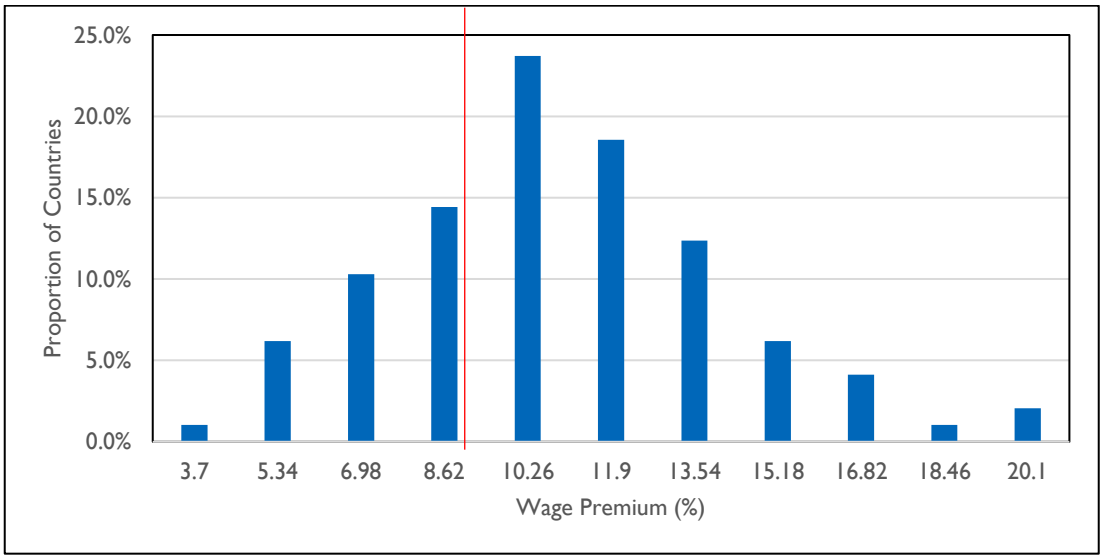
Figure 9: Return to Education



Sources: 1998 to 2010: Montenegro and Patrinos. 2011: MCC 2014. 2017: Study team estimates.[36]

[36] Montenegro and Patrinos (2013), "Returns to Schooling Around the World: WDR 2013 Background Paper." Washington, DC: World Bank Group. February 2013. Millennium Challenge Corporation (2014), "Nepal Growth Diagnostic," Washington, D.C.: MCC.

Figure 10: Distribution of Return to Education



Source: Psacharopoulos, George; Patrinos, Harry Anthony.

The shadow price of human capital remained low in the post-earthquake period, at 6.1 percent, down from the peak estimate of 13 percent in 2011, and falling below the long-term trend of 8.8 percent. At this rate of wage premium, the internal rate of return for an additional year of education is only 8 percent, which fails to hurdle the 12 percent cost of borrowing to finance such investment in education.

4. ***Health:*** Health is one of the most important components of human capital, as a healthy workforce guarantees a healthier economy, ultimately increasing the overall labor productivity.[37] Findings of the World Bank's 2018 Nepal Systematic Country Diagnostic[38] depict that Nepal has made significant strides in health as the average life expectancy at 70 years at birth is at par with the regional average.[39] The report further claims that health is not a major constraint, as even when individuals have the skills and good health, underdeveloped labor markets limit their ability to access jobs. Similar findings were cited concluding that health is not a binding constraint to the economy.[40]

5. ***Labor productivity:*** Labor productivity is a main driver for growth as it allows a country to lower the cost of production and compete in a larger market. Labor productivity is defined as the output corresponding to input obtained from the workforce.[41] Nepal's low labor

[37] Finlay, J. (2007). The Role of Health in Economic Development, Retrieved from: https://www.researchgate.net/publication/5079299_The_Role_of_Health_in_Economic_Development/citation/download.
[38] World Bank (2018). Nepal Systematic Country Diagnostic. Washington DC: World Bank Group.
[39] Please see Appendix 8 for the comparative analysis on life expectancy among South Asian countries.
[40] Millennium Challenge Corporation (2014). Nepal Growth Diagnostic. Kathmandu, Nepal. Retrieved from https://assets.mcc.gov/content/uploads/2017/05/Nepal_CA_withCover.pdf .
[41] Suna Korkmaz, O. K. (2017). The Relationship between Labor Productivity and Economic Growth in OECD Countries. International Journal of Economics and Finance.

productivity contributes to depress the social returns to economic activities in the country. For example, Nepal's agricultural labor productivity is only 17 percent of the average in South Asia. In terms of GDP per employed labor, Nepal ranks the lowest in Asia and 69th among 77 emerging economies in the world. Nepal's total factor productivity increased and accounted for 13 percent of growth in most recent estimate, but still remains low compared to its 50 percent share in countries that experienced sustained accelerated growth.

G. *Infrastructure: Electricity supply no longer a binding constraint; transport infrastructure remains as a binding constraint*

The lack of basic infrastructure forced the nation to witness an average of 4.6 percent of economic growth over the last decade.[42] This low growth relative to Asian neighbors was a result of a low level of public investment.[43] Nepal's capital expenditures are low, at 2 percent of GDP for 2010-2017.[44] Similarly, the average gross public investment (5 percent of GDP) is below the average of other low-income countries.[45] Poor infrastructure lowers the social returns on investments. Nepal ranked 112 out of 138 countries on the Global Competitiveness Index of Infrastructure in 2019. Nepali enterprises face cumbersome procedures in dealing with construction permits and getting an electrical connection, which raises their operational cost.[46] Bad transport infrastructure is a binding constraint to investment and economic growth in Nepal. According to the IMF, if Nepal's infrastructure could be raised to a level (i.e., in terms of quantity and quality) comparable to the average level among lower middle-income countries in Asia, the country's annual growth rate could rise more than 4 percentage points, resulting in a growth rate of 11 percent in the post-earthquake period. According to HRV's second test, the significant increase in GDP that is expected with the improvements in infrastructure provide strong evidence that bad infrastructure (i.e., transport) is a binding constraint to investment in Nepal.

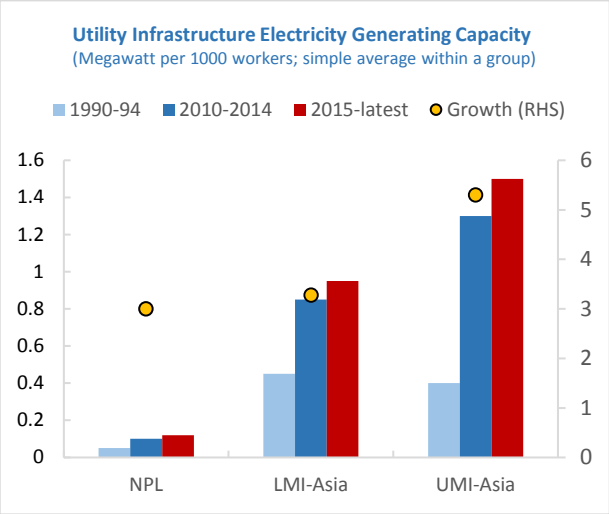
1. ***Energy infrastructure and hydropower***: Access to energy is essential for investments, innovations, and the emergence of new industries, which are the engines of value-addition, jobs and wealth creation in a country. The Nepal Electricity Authority (NEA) serves as the main supplier of electricity in Nepal. NEA operates its own hydropower generating plants, purchases electricity from independent power producers, and imports electricity from India, to meet the country's growing power demand.

   Similarly, in terms of individual consumption, although 95 percent of the population is estimated to have access to grid and off-grid electricity, the per capita electricity consumption is still very low, at 177 kilowatt-hours (kWh) per year, which is one-twentieth of the global average and

[42] World Bank Data Indicators (2019). Country Specific Nepal. Washington, DC: World Bank Group. Retrieved from https://data.worldbank.org/country/nepal.
[43] World Bank (2018). Nepal Systematic Country Diagnostic. Washington DC: World Bank Group.
[44] Nepal Rastra Bank (2019). Current Macroeconomic and Financial Situation (Based on annual data). Nepal Rastra Bank. Retrieved from https://www.nrb.org.np/ofg/macroeconomic.php?tp=current_macroeconomic&vw=15.
[45] World Bank (2018). Nepal Systematic Country Diagnostic. Washington DC: World Bank Group.
[46] World Bank (2019). Doing Business 2019. Washington, DC: World Bank Group.

one-fifth in the South Asian region.[47] Figure 11 shows that Nepal still has a very low electricity generating capacity relative to the number of workers, compared to lower middle-income and upper middle-income countries in Asia, suggesting a very low electricity intensity in the country's economic activities. However, Nepal has significantly improved distribution efficiency as the proportion of generated electricity reaching final consumers increased significantly and even exceeded the efficiency of lower middle-income Asian countries. It reached levels comparable to upper middle-income Asian countries. Nepal succeeded in meeting the deficit in electricity supply during peak load periods by importing electricity from India. In 2019, Nepal also imported electricity power worth of 653 MW from India,[48] as it could not meet its peak demand of about 1,500 MW.

Figure 11. Quantity and Quality of Electricity Infrastructure



Source: IMF Nepal Article IV Review, 2020.

Nepal's hydropower generation potential is 40 GW. However, only 1.1 GW was realized to date, which indicates that electricity constitutes less than 5 percent of energy consumption despite the country's large potential.[49] The GON successfully increased the supply of electricity by bringing in additional power generation capacity, improving consumption efficiency, and allowing imports from India, thereby ending the frequent and long power outages that used to be the norm before 2017. At that time, enterprises relied on expensive diesel generators for their operations, which severely constrained productivity and growth. While in 2013, two-thirds of Nepali firms identified a lack of adequate and reliable electricity as a major constraint to doing business; however, that number has since dropped to almost zero.

[47] Asian Development Bank (2017). Nepal Energy Sector Assessment, Strategy and Road Map. Asian Development Bank. Retrieved from https://www.adb.org/sites/default/files/linked-documents/cps-nep-2013-2017-ssa-02.pdf.
[48] The cost of imports from India (NPR 5 - 9/kWh) is projected to be lower than expensive storage projects in Nepal (>NPR 10/kWh), indicating that imports can be a more economical option for meeting demands in the dry season.
[49] Nepal Electricity Authority (2018). NEA Annual Report 2017/18. Nepal Electricity Authority.

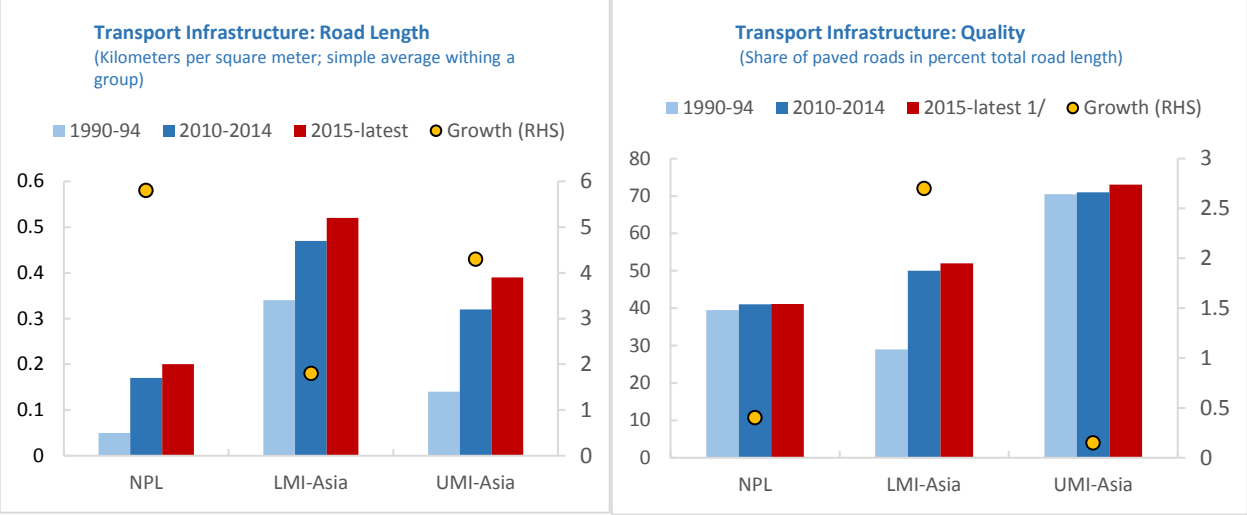
2. ***Road access****:* According to the 2019 Global Competitiveness Report, Nepal ranks low on road connectivity and road condition (120 out of 141 countries). The road network in Nepal includes the Strategic Road Network (SRN) and the Local Road Network (LRN). The former includes all the national and provincial highways, and the rest fall under the LRN. The total length of roads is more than 80,000 km (of which 13,447 km falls under the SRN).[50] The existing road networks do not provide residents in the mid-hill and mountain regions good access to transportation facilities, as more than 60 percent of the road network is concentrated in the lowland (Terai) region. A 2018 Department of Roads survey reported that almost 10.3 million rural residents (of the mid-hill region) still have to walk for about two hours to reach a SRN road. Moreover, the sub-standard quality of the road network increases the time to import and export merchandise goods.[51]

   Bad transportation infrastructure remains as a binding constraint to investment, as shown by the limited quantity, as well as quality, of its road network. Figure 12 shows that Nepal still lags in the length of total road network relative to its land area, compared to lower middle and upper middle-income countries in Asia. In addition, Nepal paved only less than half of the road network. Unlike the case in electricity that Nepal can use imports from India to meet supply deficits, transportation is a non-tradable service, and hence deficits result directly in the high cost of transportation service.

[50] The total length of (paved, graveled and earthen roads), during the 9th five-year plan (1997/2002), across the nation stood at 2,905 km, 1,656 km and 179 km, respectively. By the 13th five-year plan (2017/22), the length for the same stood at 6,979.33. km, 2,276.87 km and 4,191.42 km respectively. This information was retrieved from. the 9th Five-year plan, National Planning Commission (1997/2002).

[51] Pokharel, R. and Acharya, S. (2015). Sustainable Transport Development in Nepal: Challenges, Opportunities and Strategies. Journal of the Eastern Asia Society for Transportation Studies, Vol 11.

Figure 12. Quantity and Quality of Transport Infrastructure



Source: IMF Nepal Article IV Review, 2020.

3. ***Transportation***: Efficient transportation systems provide increased access to essential public and business services and facilitate the movements of goods to foster growth. However, the country's landlocked location and mountainous terrain have impeded the development of a good road and efficient transportation systems. Geographical complexity and unsustainable settlement patterns have restricted people from different parts of the country to access road services and other economic activities.[52]

   In Nepal, road transportation is the predominant mode of transportation.[53] However, due to the lack of a reliable road network, almost one-third of the population considers road transportation as a major constraint for economic development. Nepal's poor transportation infrastructure and its limited regional connectivity have not only widened the transport services trade deficit (which stood at $607.6 million in FY 2018/19) but also decreased the export competitiveness of merchandise goods.[54] In 2017, the cost of exporting a container of merchandise from Nepal reached $1,764, whereas the same was estimated at $970, $945 and

[52] Asian Development Bank (2017). Nepal Energy Sector Assessment, Strategy and Road Map. Asian Development Bank. Retrieved from https://www.adb.org/sites/default/files/linked-documents/cps-nep-2013-2017-ssa-02.pdf
[53] Government of Nepal. (2020). Govenment of Nepal, Investment Board. Retrieved from https://www.ibn.gov.np/transportation.
[54] Asian Development Bank (2017). Nepal Energy Sector Assessment, Strategy and Road Map. Asian Development Bank. Retrieved from https://www.adb.org/sites/default/files/linked-documents/cps-nep-2013-2017-ssa-02.pdf.

$611 in Bangladesh, India, and Pakistan, respectively.[55] Similarly, the transport syndicate also increased domestic transport service prices and affected the quality of public transportation.[56]

4. ***Alternative transport systems****:* Air transport facilitates a country's integration into the global economy and provides vital connectivity on a national, regional, and international level. For a landlocked country like Nepal, air transport contributed to global connectivity. Nepal's Air Service Agreement with 39 countries provided immense opportunities in terms of international air connectivity. However, out of the country's 48 airports, only 34 are in operation (including one international airport),[57] despite Nepal's reliance on air transportation for the influx of tourists. Lack of aviation infrastructure and heavy air traffic congestion at the Tribhuvan International Airport (TIA) is an urgent concern for aviation stakeholders. To address this problem, the GON upgraded TIA and established three additional international airports - Gautam Buddha International Airport, Pokhara Regional International Airport, and Nijgadh International Airport. However, these projects are yet to be completed.

   In recent years, the GON also considered railway as an alternative transport and prioritized its construction. It conducted various Detailed Project Reports (DPR) and feasibility studies for the construction of railway routes in Nepal. Among them, Kathmandu-Kerung and Kathmandu-Raxual were given the utmost priority. However, the GON is yet to allocate resources for the construction of these projects.

5. ***Telecommunications****:* Information and communication technologies provide the foundation for building and applying knowledge in the private and public sectors. Nepal's communication infrastructure and services have shown consistent growth over the last decade. Before 2004, telecommunication services were provided by the state-owned Nepal Telecommunication Corporation alone. However, now there are numerous telecom service providers.[58] According to the Nepal Telecommunication Authority (NTA), Nepal has the highest cell phone subscription rate in the South Asian region, where it increased from a mere 8.9 percent in 2010 to 98 percent per 100 people in 2019.[59] Similarly, internet users in Nepal are roughly in line with other similar low-income countries and within the range of its comparator countries in the region. Nepal currently enjoys a high broad-band subscription rate of around 70.4 percent.[60] Furthermore, logistics professionals rated Nepal's telecommunications and IT infrastructure

[55] Asian Development Bank. (2009). Nepal Critical Development Constraints. Asian Development Bank.
[56] Truckers were normally found to be fixing the cost of transportation service and killing competition among truckers. This ultimately increases the cost of doing business for industries and business enterprises, thus reducing their engagement and bringing in low economic returns on their activities.
Pangeni, R. (April 23, 2018). "End of Transport Syndicate Can Bring Down the Price of Consumables." Kathmandu: My Republica. Retrieved from https://myrepublica.nagariknetwork.com/news/end-of-transport-syndicate-can-bring-down-price-of-daily-consumables/.
[57] Asian Development Bank. (2015). Sector Assessment (Summary): Transport, and Information and Communication Technology—Air Transport. Asian Development Bank.
[58] Millennium Challenge Corporation (2014). Nepal Growth Diagsnostic.. Kathmandu, Nepal. Retrieved from https://assets.mcc.gov/content/uploads/2017/05/Nepal_CA_withCover.pdf.
[59] World Bank Data Indicators (2019). Country Specific Nepal. Washington, DC: World Bank Group. Retrieved from https://data.worldbank.org/country/nepal.
[60] Nepal Telecommunications Authority. (2019). MIS Report. Nepal Telecommunications Authority.

quality to be good.[61] Thus, telecommunications is not a binding constraint for Nepal's economic growth and development.

2.1.2.3 Low Appropriability: A Binding Constraint

This section analyzes the risks faced by investors in retaining the return on investment (termed as "appropriability" in the HRV framework), which emanates from a market failure[62] and government failure.[63] While market failure examines informational externalities[64] and coordination failures,[65] government failure explores broad micro- and macro-economic risks. Micro risks in the HRV framework may include risks factors, such as corruption, taxation, and other types of regulatory burdens faced by enterprises. Macro risks include imbalances in the country's economic accounts, such as trade, current accounts, the balance of payments, and fiscal deficits, which raise the likelihood of devaluation, rising inflationary pressure, and higher taxes. All these, if realized, will reduce the real returns that investors could expect to retain from their investments.

A. Market Failures: Mixed Result

Market failure can be another potential constraint to economic growth, and there are primarily two types of market failures, including information externalities and coordination failures.[66]

1. ***Self-discovery and informational externalities:*** In the case of information externalities, costly self-discovery processes (which are defined as the ability to capture return on new innovation) could discourage the private sector from exploring new avenues of product innovation. In other words, if the entrepreneurs are unable to capture returns on innovations, the private sector actors have little incentive to engage in further investment and development. There is some evidence that self-discovery in Nepal is adequate to support growth and, hence, is not a binding constraint.[67] The study noted that successful investments create an informational public good that is utilized by new entrants into the sector and, therefore, increases the export diversity[68] of a country. Nepal scored high at 0.90 (1=highest) in the J2SR's export diversification indicator, leading many to conclude that self-discovery and informational externalities must not be binding constraints to economic growth. However, some of Nepal's diversification into more export

[61] World Bank (2018). Nepal Systematic Country Diagnostic. Washington DC: World Bank Group.
[62] Market failure has two components—coordination failure and information failure. Coordination failure are defined as the failure of the market to respond to potential investors' demand for diverse set of services that allows firms to innovate, market their products and make profit. Information failures are defined as the failures of firms to discover which products they can produce at low enough cost to be profitable and competitive
Ianchovichina (2009). Growth Diagnostic. World Bank Joint Vienna Institute.
[63] Risk associated with the overall political situation of the country is government failure. From: Nisar, A., Cheema A.R, and Alkram, S. (2018). Low Private Investment and Government Failure as the Binding Constraint to Pakistan's Economy Growth Diagnostic Analysis. European Online Journal of Natural and Social Sciences.
[64] As per HRV innovation occurs some cost on which imitators can free ride which is informational externalities.
[65] As per HRV coordination failure occurs when there happens to be restriction of non-tradable inputs like human resource, infrastructure and so on.
[66] Hausmann, R., Rodrik, D. and Velasco, A (2005). "Growth Diagnostics." John F. Kennedy School of Government, Harvard University (Cambridge, Massachusetts). Retrieved from http://ksghome.harvard.edu/~drodrik/barcelonafinalmarch2005.pdf.
[67] Millennium Challenge Corporation (2014). Nepal Growth Diagnostics. Kathmandu, Nepal. Retrieved from https://assets.mcc.gov/content/uploads/2017/05/Nepal_CA_withCover.pdf.
[68] Nature and type of goods that country is exporting is called export diversity. Retrieved from UNCTDA (2018). Export Diversification and Employment.

products has not been driven by comparative advantage consideration but by artificial arbitrage opportunities created by its preferential access in the Indian market under the India-Nepal bilateral trade agreement, while suppliers from other countries face a very high import duty. In addition, Nepal was not successful in achieving the real purpose of self-discovery, which is to diversify towards more complex products (i.e., higher value-added). In fact, Nepal's complexity index has largely remained stagnant for more than a decade, suggesting an inadequate pace of self-discovery by Nepali entrepreneurs. However, this may be due to the high cost of experimentation rather than information failure.

2. ***Coordination failure:*** Coordination failures occur when entry into a particular sector or activity is restricted by the coordinated actions of a government or the private sector. For example, the collusive behavior of the private sector may cause a hindrance for a particular individual to enter into the market or the entrepreneur may be discouraged if there are limited inputs or technology required for the production. Furthermore, in the presence of coordination failures, markets do not produce new products and, hence, this prevents the growth of the economy. Coordination failure in Nepal is not rampant, but definitely a few sectors suffer from disaggregated market coordination.[69] For instance, the transportation sector of Nepal suffers from cartel-like behavior by the private sector, and such an act restricts the investment from the private sector.[70]

B. ***Government failures:*** Instability in government affects private investment in various ways. On the one hand, frequent changes in the government and lack of clear, political mandates disincentivize investment and impede development spending on infrastructure and capital projects. The HRV methodology classifies government failure into two categories, namely macro and micro risks. The macro risks emanate from government actions that can lead to a reduction in the share of returns that private investors can retain, such as a widening fiscal deficit that may signal higher taxes in the future, a widening trade, and a current account imbalance that may signal a depreciation and stronger inflationary pressure in the future. Such macroeconomic developments would cut the share of returns that can be retained by private investors.

1. Micro Risk: Binding Constraint

Micro risks emanate from distortions that raise the cost of doing business in the country. This section examines the vital microeconomic risk that impeded Nepal's economic growth.

a. ***Corruption*:** Corruption is usually a common phenomenon across the developing economies and dealing with corruption can raise the cost of doing business.[71,72] In 2018, Transparency International ranked Nepal at 148 among 180 countries in its corruption

[69] Ibid.
[70] Nepal Economic Forum. (2018). Understanding the Cartel Economy. Nepal Economic Forum.
[71] Brazilian dictionary defines corruption as "The term designated for the phenomenon in which a public servant is bought to act in a way outside of normative pattern of the system, favoring private interest in exchange for compensation. Corrupt is, therefore an illegal behavior of one who performs the role in the state structure. Retrieved from Munhoz (2008).
[72] Munhoz, C.P. (2008). Corruption in the Eyes of the World Bank: Implications for the Institution's Policies and Developing Countries. Pennsylvania State International Law Review, Vol. 26, No 3. Retrieved from https://elibrary.law.psu.edu/cgi/viewcontent.cgi?article=1772&context=psilr

index. Although the ADB and MCC studies did not specifically identify corruption as a binding constraint, corruption permeates many aspects of doing business, such as registering a business, paying taxes, and enforcing contracts, that it could potentially impede investments. Corruption is an outcome of the weak rule of law, the inconsistency of policy implementation, and wide discretionary authority delegated to bureaucrats.

b. ***Cartel behavior and lack of competition*:** High barriers to entry impede new private sector entrants in a sector that shows potential remunerative returns. This is reported to be the case in Nepal's transportation sector. Cartels in this sector operate under the veil of transport associations and though the government has scrapped the laws (regarding renewal of the registration of transport associations and stopping the registration of new committees), it was not able to implement these effectively and, therefore, the cartel still exists, latently. The lack of competition resulted in poor conditions of public transportation as evidenced by the persistent overcrowding of passengers in city buses.[73]

c. ***Contract enforcement and property rights*:** A robust enforcement of contracts is a fundamental requirement for an efficient market economy, as it affects every aspect of operating a business, from purchasing inputs, to hiring workers, and to selling products to consumers**.** Nepal has a weak judiciary institution and ranks low in enforcing contracts (151 out of 190 countries) in the World Bank's *Doing Business* index for 2020. According to this report, it takes 2.5 years (910 days) to settle court cases that involve business contract enforcement, and costs imposed on parties reach 27.3 percent of the claim value, which is higher than that of Bhutan and Sri Lanka.[74] A 2019 study by the Samriddhi Foundation reports that the high cost and slow litigation process push business entrepreneurs to by-pass the courts and seek a more costly but quicker fix through arbitration.

d. ***Other conditions of doing business:*** At every stage in an enterprise's life-cycle, from starting a business, to operating one, and up to liquidation, Nepali enterprises are burdened by cumbersome business and property registration, which according to the World Bank's Ease of Doing Business Survey (EDBS) 2020, ranked 94 out of 190 countries (94/190) in weak contract enforcement (151/190), long waiting time in getting electricity (135/190), in dealing with construction permits (107/190), and high collateral requirement and uncertain rules in resolving insolvency (87/190). Such challenges in doing business have placed enterprises at a very disadvantageous starting position, relative to competitors in other countries, and as a result, have limited their opportunities in the domestic and foreign markets.

   In a case study, the World Bank reported that, except for raw materials, profits represent the highest share at 18.7 percent of the cost structure of men's cotton shirts in Nepal. At that level, Nepali entrepreneurs earned 7.5 percentage points more in

[73] Nepal Economic Forum, (2018).

[74] Please see Appendix 10 for the detail on enforcing contracts in Nepal, Time and Cost.

profits compared to their counterparts from Bangladesh, Vietnam, and Tanzania. This excess profit could only represent some form of compensation for the higher operating risks (i.e., political and policy uncertainty, challenging investment climate, and high cost and elevated risk of doing business environment) faced by Nepali enterprises compared to those in other countries. The cost associated with those risk factors is almost as high in share to total cost as transport cost and overhead cost and is higher than transactions cost in clearing products at the border and export taxes. Although, the growing political stability may have alleviated some of the risk factors, Nepal's poor investment climate and ease of doing business environment still contribute to this risk.

2. Macro Risk: Emerging Constraint

The World Bank described Nepal as having a high migration, low growth economy. While remittances, which is now equivalent to 25 percent of GDP ($7.8 billion in FY18/19), have had a positive effect on the living standard of many Nepali households (improving access to quality education, health care, consumption, and home improvements), it has eroded the domestic economy's competitiveness and heightened macroeconomic vulnerabilities.

Strong remittances from workers abroad created a stronger inflationary pressure (especially in non-tradable goods) in Nepal compared to its leading trade partner – India. Since the Nepali currency is pegged to the Indian currency, such a difference in inflation resulted in an overvaluation (11 percent) of the local currency and contributed to the erosion of the country's competitive advantage.

Nepal's staggering trade deficit of $11.4 billion (an increase from $10.8 billion in 2017/2018) is depleting its foreign reserves, such that it can only cover 7.7 months of import bills, down from 11.4 months two years ago. At this rate of decline, Nepal's foreign reserves could drop to a precarious level that will raise the risk of an interruption in its economic activities. To narrow the trade, current accounts, and balance of payments deficits, Nepal may devalue its currency, which will fuel further increases in prices. Also, given that the fiscal deficit has reached 10 percent of GDP, the GON may raise the already high rates of taxes in the country.

With depreciation, stronger inflationary pressure, and higher taxes in the horizon, private investors face a higher risk of retaining a lower share of returns and may cause them to hold back on their investments in the country.

A sovereign credit rating provides a measure of overall macro risks faced by a county. A good rating indicates that a nation's macro-economy is on a sound footing, the policies are credible and competitive, and the institutional, political and governance regimes are trustworthy and predictable. This allows the economy to access funding in the international capital market, where it can borrow at reasonable rates to finance development activities.[75] However, in 2013, since Nepal is yet to be rated, the World Bank estimated a pseudo rating for Nepal's economy at a CCC credit rating, which suggests a very high risk according to the S&P and Fitch rating

[75] Wilson, E. (2019, June 28). Capital markets: Nepal seeks the right rating. ASIAMONEY. Retrieved from: https://www.euromoney.com/article/b1g03k6932wc9q/capital-markets-nepal-seeks-the-right-rating.

system.[76] As a result, Nepal is incapable of issuing bonds in the international market, leaving investors to depend on alternative general country risk ratings prepared by specialized agencies.[77]

In this regard, the government awarded Fitch Ratings to carry out a sovereign credit rating for Nepal by the end of this fiscal year to provide an insight into the level of risk while investing and takes into account the political, social, and financial risks. [78,79] A favorable credit rating is an outcome of political and institutional stability, international trade, and robust macro-economic policies among many others.

Another summary measure of a shadow price and *ex ante* risks to private sector growth is the price-earnings (PE) ratios for broad stock market indices of various countries. We expect such data to capture *ex ante* risks of all types, whether related to macroeconomic or other factors. The lower the PE ratio, the greater is the respective market's overall estimation of *ex ante* risk. This is based on an efficient market asset pricing model, where price is the present value of the stream of expected earnings with the discount rate reflecting risk assessment by the market. A higher risk component of the discount rate will give a lower present value (or price), making the price-to-earnings ratio smaller. Nepal reported an average PE ratio of 13.2 for its 27 commercial banks, which is higher than Sri Lanka but lower than Bangladesh and India. This suggests that relative to both comparator countries, markets assess and price the overall level of *ex ante* risk (to which macroeconomic factors are but one contributor) in Nepal as moderately high.

[76] CCC is a credit rating used by the S&P and Fitch credit agencies for long-term bonds and some other investments. It is equivalent to the CAA rating used by Moody's. A CCC rating represents an extremely high risk bond or investment; banks are not allowed to invest in CCC rated bonds. CCC bonds are junk bonds.
Sapkota. (2019, February 18). Nepal's credit worthiness. The Kathmanduu Post. Retrieved from https://kathmandupost.com/opinion/2019/02/18/nepals-credit-worthiness.

[77] "Nepal's credit worthiness." The Kathmandu Post https://kathmandupost.com/opinion/2019/02/18/nepals-credit-worthiness (Date Accessed on 05/01/2020).

[78] The Himalyan Times. (2020, Jaunary 03). Fitch Ratings measuring Nepal's sovereign rating. The Himalayan Times . Retrieved from: https://thehimalayantimes.com/business/fitch-ratings-measuring-nepals-sovereign-rating/.

[79] Ministry of Finance, Chile. (2019). How can a country improve its credit or risk rating? Ministry of Finance, Chile. Retrieved from: https://www.hacienda.cl/english/investor-relations-office/frequently-asked-questions/how-can-a-country-improve-its-credit-or.html.

Table 2. Price-to-Earnings Ratio

Country	PE Ratio
India (2018/19)	22 to 29
Bangladesh (2018/19)	14 to 17
Nepal (4th Quarter 2018/19)	13.2
Sri Lanka (2018/19)	8 to 10

Source: 1) https://www.ceicdata.com/en/indicator/india/pe-ratio (for India, Bangladesh, and Sri Lanka); and 2) https://www.investopaper.com/news/p-e-ratio-27-commercial-banks/ (for Nepal).

a. ***Taxation*:** The 2014 MCC study suggests that entrepreneurs often consider taxes as an additional cost to doing business. As such, taxes hinder private investment. That is, high taxes contribute to low private appropriability of economic return and, hence, make investment unattractive to potential investors. The studies from both the ADB (2009) and MCC (2014) concluded that Nepal's tax rate is not a major constraint in Nepal.[80] However, recent changes in taxes raised Nepal's tax on profit to 42 percent, placing Nepal behind Sri-Lanka and India in the region.[81] Total tax rate (in the form of profit tax, labor tax, and other taxes) of Nepal is one of the highest among South Asian countries and may impede investment and growth.[82] In addition, Nepali enterprises face a cumbersome process when paying taxes. The country ranks 175th among 190 countries in the area of paying taxes (190 being the worst).

b. ***Political risk***: Political risks, such as the frequent changes in government and unpredictable application of policies, can distort the market and impede investment.[83] Political risk used to be the major constraint in Nepal, as a World Bank study reported a drop in its political stability ranking from 26.9 in 1996 to 2.9 in 2007.[84] However, the peaceful ratification of the constitution, orderly election of a majority government, and successful transition to a federal form of government, contributed to the country's growing political stability. Furthermore, Nepal successfully implemented the transition to a federal form of government, but the challenges remain monumental, according to the IMF. Having achieved this stability, Nepal needs to focus on building the capacity of public institutions to help attract and facilitate investment in the country.

c. ***Government capital expenditure:*** The MCC study identified the lack of capital expenditure as a constraint to investment and economic growth in Nepal but attributed political instability as the primary cause. Despite Nepal's growing political stability, capital expenditure remains wanting. Although the budgetary allocation for capital

[80] As per the World Bank Doing Business Report 2014, Nepal's tax rate was 31.5 percent of total profit-below the South Asian average of 40.1 percent. Doing Business Report, World Bank (2014).
[81] Please see Appendix 3 for the detailed tax structure among major South Asian countries.
[82] World Bank (2019). Doing Business 2019. Washington, DC: World Bank Group. Retrieved from https://www.doingbusiness.org/en/reports/global-reports/doing-business-2020
[83] Wagdi, A. H. (2016). Political Risks and Their Economic Effects: Evidence from Egypt. International Journal of Economics and Finance.
[84] The ranking is done by a worldwide governance indicator. Worldwide Governance Indicator. World Bank (2020).

expenditure is increasing,[85] budgetary execution was persistently delayed, which compromised the completion of development projects.[86] As a result of the delayed execution, the Nepal Rastra Bank (NRB) reported that 34 percent of the capital budget (NPR 106 billion of 314 billion) of 2018 was spent in the last three months of the fiscal year. The IMF prodded the GON to correct this practice to improve the quality of capital expenditure and optimize its contribution to growth. Furthermore, the IMF noted that local governments execute their budgets without proper guidance from a full-fledged development plan, compromising the efficiency in the use of scarce resources.

d. ***Overdependence on remittance and possibility of the Dutch disease:*** Although remittances can have a positive effect for recipient countries in the short term, inflows of remittances may at the same time exert adverse effects on the trade competitiveness of an economy, by appreciating the real exchange rate,[87] as the increase in the supply of funds creates stronger inflationary pressure in the economy. The IMF estimated that Nepal's currency is overvalued by as much as 11 percent. This contributed to the erosion of the country's competitiveness and, as a result, created a staggering trade deficit that reached the equivalent of 38 percent of GDP.

   Remittance could be a potential source of finance, but due to the lack of good investment opportunities and enabling environment, these are being spent on consumption. Such consumption stimulates economic growth, to a certain extent, but it also erodes the economy's competitiveness, and this is reflected in the negative balance of payment due to soaring imports. Hence, even with the substantial amount of remittances over many decades, the country's economic growth has remained at its low long-run trend of only 4.2 percent.

   A decline in remittance inflows would lower growth across all sectors, which primarily depends on remittance-financed consumption. Furthermore, lower remittance inflows would likely lower government revenue, which is largely generated from taxes levied on consumption goods.

2.1.2.4 Cost of Finance: Financial Markets Have Recently Tightened, but the Cost of Finance is not yet a Binding Constraint

Finance forms an integral part of the development process in all bank-financed operations and a country's institutional strengthening efforts. Similarly, the financial market plays a crucial role in fueling

[85] International Monetary Fund (2019). 2018 Article Iv Consultation—Press Release; Staff Report; and Statement by the Executive Director for Nepal. IMF Country Report.
[86] Maharjan, A. (2019). Implications of Poor Budgetary Performance. Samridhi Foundation . Retrieved from: https://samriddhi.org/news-and-updates/implications-of-poor-budgetary-perfomance/.
[87] Polat, B., and Andrés, A. (2019). Do Emigrants' Remittances Cause Dutch Disease? A Developing Countries Case Study. The Economic and Labour Relations Review. Retrieved from https://journals.sagepub.com/doi/abs/10.1177/1035304619828560.

economic growth by facilitating the mobilization of capital.[88] Thus, against this background, the next sub-section 2.1.3 examines the status of finance in Nepal's economy by exploring international and domestic contexts.

2.1.2.5 Inadequate Local Finance: Not a Binding Constraint

In Nepal, the local financial market is dominated by the banking sector and other financial institutions, which work under the supervision of the Central Bank, known in Nepal as Nepal Rastra Bank. The regulatory provisions require commercial banks to increase their investment in "productive" sectors.[89] However, this process encountered many challenges, including insufficient capacities of local governments and the inadequacy of resources in general.[90] Local businesses largely depend on personal financial resources to fund their activities.[91] In this context, this section examines a tool of local finance (i.e., the savings rate) to understand if it is an impediment.

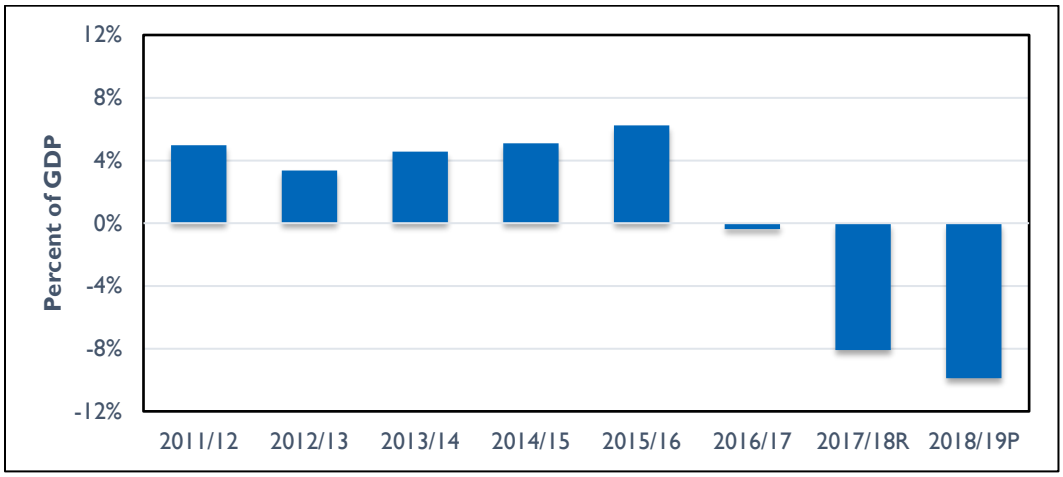
A. Savings Rate and Interest Rate: Supporting the Conclusion that Finance is Not a Binding Constraint

A country's savings rate generally indicates its financial state and growth. In this regard, household savings are the main source of government borrowing to fund public services and credit supply in the market.[92] Factors, such as retirement age, borrowing constraints, income distribution over lifetime, demography, and the welfare state, influence household savings.

Excess supply and a low price are incontrovertible market evidence that a factor is not a binding constraint. Nepal's gross national savings rate increased over the last decade, reaching 52 percent in 2018/19, an increase of 16 percentage points. Furthermore, Figure 13 shows that Nepal's gross national savings (supply of finance) exceeded the gross capital formation (demand for finance) by an average of 5 percent of GDP. Given the excess supply of finance during this period, the real interest rate showed a declining trend over the decade before the earthquake and even crossed in the negative territory in 2009 to 2010 (Figure 14).

[88] Duisenberg, W. F. (2001). The Role of Financial Markets for Economic Growth. European Central Bank. Retrieved from: https://www.ecb.europa.eu/press/key/date/2001/html/sp010531.en.html
[89] Giri, P. "Productive Sector Lending: Stimulus for Growth." The Himalayan Times, (May 18, 2017). Retrieved from https://thehimalayantimes.com/opinion/productive-sector-lending-stimulus-growth/
[90] UN, (2015). The Challenge of Local Government Financing in Developing Countries. United Nations. Retrieved from https://sustainabledevelopment.un.org/content/documents/1732The%20Challenge%20of%20Local%20Government%20Financing%20in%20Developing%20Countries%20_3.pdf
[91] World Bank (2018). Nepal Systematic Country Diagnostic. Washington DC: World Bank Group.
[92] Asian Development Bank. (2015). Sector Assessment (Summary): Transport, and Information and Communication Technology—Air Transport. Asian Development Bank.

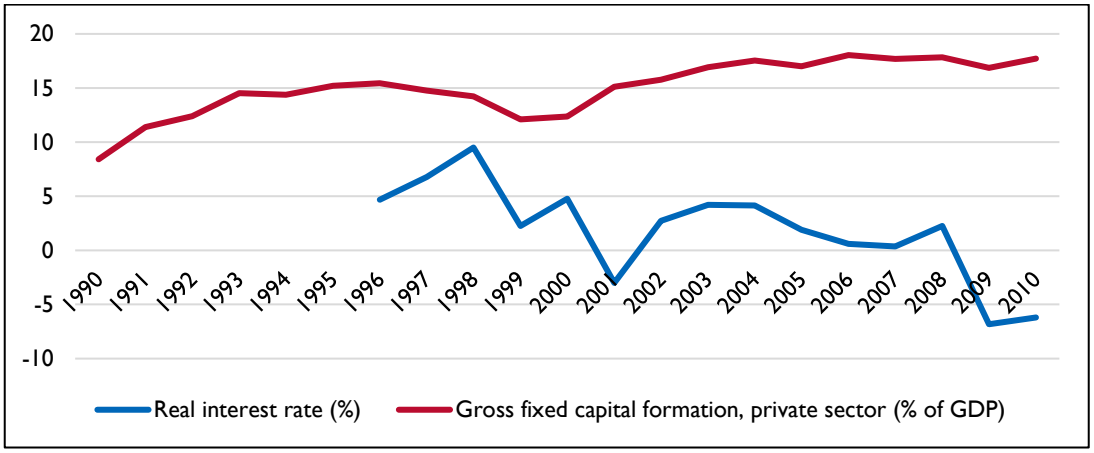
Figure 13: Resource Gap (Gross National Savings – Gross Capital Formation)



Source: Nepal Rastra Bank. Current Macroeconomic and Financial Situation, FY2018/19.

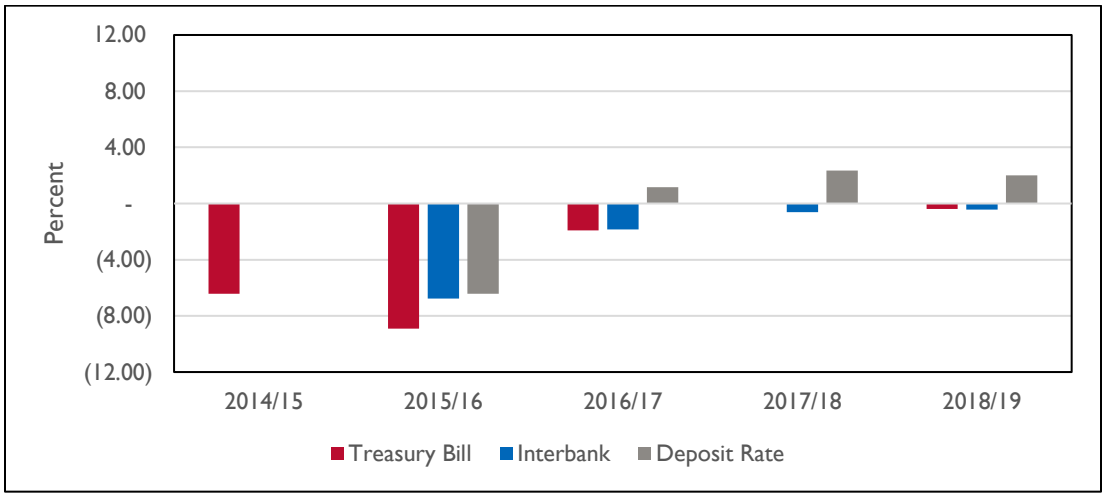
Even with the recent deficits in gross national savings to finance gross capital formation, local financial institutions are not rewarding depositors enough to raise domestic capital, suggesting that effective demand for credit may not be that strong to justify such an increase. The real deposit rate (inflation-adjusted) is only between 1 percent to 2 percent, and the real rate for 365-day treasury bills, as well as the real rate that banks charge each other, are still in the negative territory (Figure 15).

Figure 14: Real Interest Rate



Source: Nepal Rastra Bank. Current Macroeconomic and Financial Situation, FY2018/19.

Figure 15: Real Interest Rate



Source: Nepal Rastra Bank. Current Macroeconomic and Financial Situation, FY2018/19.

B. Poor Intermediation: Not a Binding Constraint

Financial intermediation is the heart of any economic system as financial institutions help to channel the surplus savings into investment.[93,94] Similarly, the banking business of any economy thrives on the intermediation abilities of financial institutions that allow the financial institutions to lend out money at higher rates of interest, while receiving money on deposits at lower rates

[93] Financial intermediation is defined as the process performed by banks to take in funds from a depositor and then lending them out to a borrower. From: Winton, A., and Gorton, G. (2002). Financial Intermediation. National Bureau of Economic Research.

[94] Abel, S. (2014). Importance of financial intermediation. The Herald . Retrieved from https://www.herald.co.zw/importance-of-financial-intermediation/

of interest.[95] Although recent developments in Nepal's financial sector have improved, including the entry of new actors, the sector remains fragile and access to financial services remain challenging.[96]

Ineffective management of liquidity has often led to a shortage of loanable funds and upward pressure on the cost of borrowing, which creates pressure on businesses, especially small and medium enterprises (SMEs) due to volatile rates or consumer retail rates. Likewise, financial institutions, especially commercial banks, are suspected to be collectively engaged in setting interest rates, which can undermine the trust of depositors over the banking system.[97] The IMF's 2018 Article IV Consultation reported some concerns on the deterioration of the quality of financial intermediation that exposed the financial sector to growing risk factors. Over the past four years, sustained strong private sector credit growth (21 percent per annum) pushed Nepal's credit-to-GDP ratio significantly above trend and above levels observed in peer countries. The report warned that a period of bank distress followed a similar rise in 2008 – 2010.

Such strong growth in private sector credit and the higher rate of growth achieved provides evidence to HRV's second test on the movements in the constraint producing significant movements in the objective (i.e., growth). However, the same strong growth in private sector credit was associated with weak credit assessment that leads to the deterioration of the quality of banks' loan portfolios. This risk is heightened in Nepal because of several factors, including:

- The limited scope to diversify loan portfolios beyond the real estate (8 percent in fixed assets), land and construction sectors (11 percent), and wholesale and retail (22 percent), combined with weak underwriting standards and risk management practices, have all contributed to a build-up of risks in the banking sector. Overdrafts account for 18 percent of the credit to the private sector, which facilitates the practice of evergreening – the act of hiding loan losses by banks.
- The practice of banks to lend some short-term loans on an ad hoc basis, as well as extending the maturity dates and renewing the facilities that ultimately help meeting the debt-service need of the borrower. Reports indicate that Nepali banks do not conduct a rigorous and regular review of their revolving loans portfolio. As a result, problems such as maturity mismatch (i.e., short-term loans financing, longer-term investment) and ever-greening are reportedly still prevalent in the banking sector.

According to the IMF report, banks usually do not take corrective measures on time, as suggested by bank inspectors. Sometimes, banks make commitments to make corrections later. It is a challenge for bank supervisors to follow up on all the commitments made by banks and ensure that appropriate corrections are made on time, especially because of limited supervisory resources. Additionally, the rise in capital requirements has led to an increase in the spread margin – defined as the difference between the interest rate financial institution receives from

[95] International Monetary Fund (2019). 2018 Article IV Consultation—Press Release; Staff Report; and Statement by the Executive Director for Nepal. IMF Country Report.
[96] Nepal Rastra Bank (2018). Financial Access Status in Nepal. Kathmandu: Nepal Rastra Bank.
[97] Ibid.

loan and pays on deposit. This margin is used essentially to trade off higher shareholders' returns, which the central bank is currently trying to curb with a lower spread margin.

In addition, Nepal's capital market is at a nascent stage and lacks both breadth and depth. Out of 215 listed companies in the Nepal Stock Exchange, almost 152 companies are classified as banks and financial institutions (BFIs) and insurance companies. They have a share of 78.5 percent in the stock market capitalization, largely due to the mandatory regulatory requirement to be listed. Furthermore, the participation of the real sector (which includes companies like hydropower, telecom, trading and hotel sector) is minimal with a market capitalization of only 4.2 percent. Apart from equity shares of listed companies, there are a few other securities, such as mutual funds, government bonds, and bank debentures, listed in the capital market that holds the balance; nonetheless, the secondary market of bonds/debentures is almost non-existent.[98]

The current average base rate of banks is 9.50 percent.[99] However, commercial banks even charge up to a 6 percent premium on the bank's base rate. This further pushes the lending rates up to 15.50 percent (average rate in 2018/19 was only 12.3 percent).[100] Nepal's modest spread margin and profitability provide supporting evidence that poor financial intermediation is not a binding constraint to investment. Since 2012, the spread margin has been declining and remained below inflation rate in the pre-earthquake period. The post-earthquake period coincided with a soft world energy market that resulted in low inflation worldwide, allowing the spread margin to exceed inflation, while in a declining trend. In 2017/18, the banking sector earned a net profit of 51.9 billion NPR over a total asset of 2,968.3 NPR, giving them a low return on total assets of only 1.8 percent.

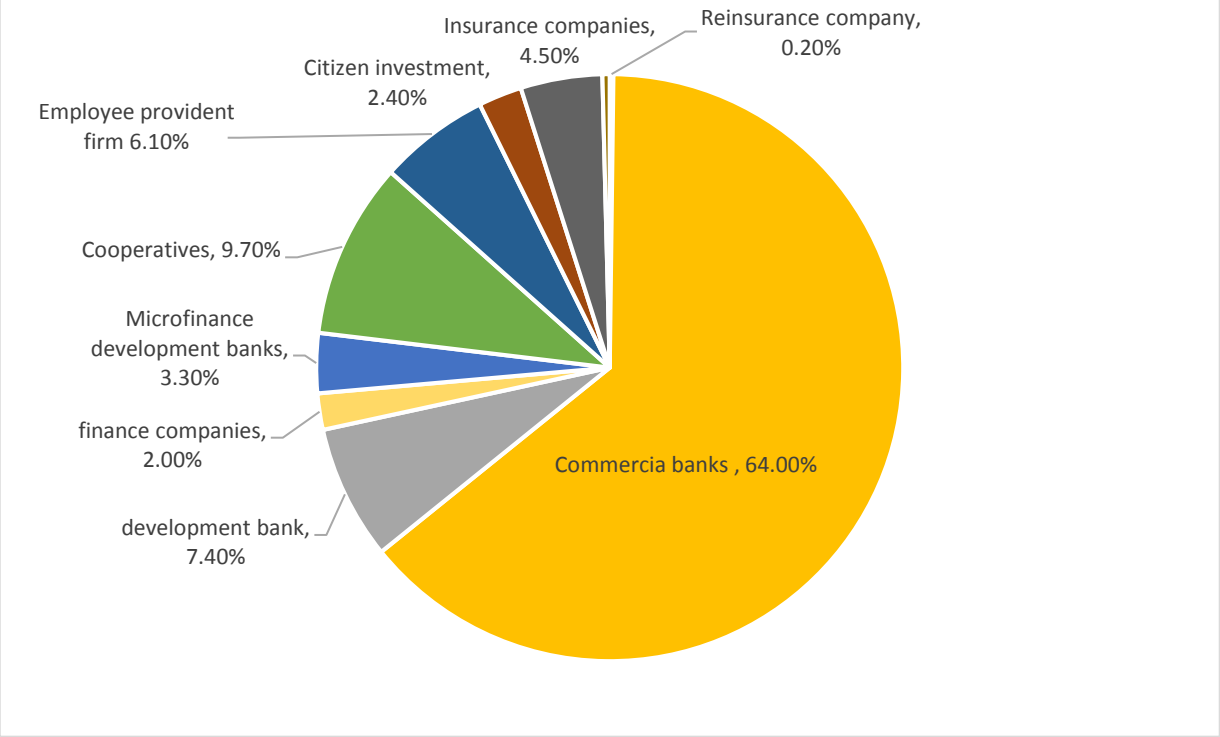
Evidence from the 2009 ADB study also suggests that unequal access to formal financial services leads to the unequal access to economic opportunities among disadvantaged and marginalized groups. The following sub-section further examines whether poor intermediation is a binding constraint to the private sector, through two parameters: a) financial market and lending dynamics (informal financing), and b) the lending interest rate.

[98] A bond is a fixed income instrument that represents a loan made by an investor to a borrower. A debenture is a type of debt instrument unsecured by collateral. Since debentures have no collateral backing, debentures must rely on the creditworthiness and reputation of the issuer for support. From: Institute of Chartered Accountant (2017). Financial Management. Board of Studies, The Institute of Chartered Accountants of India.

[99] NRB. (2019). Current Money and Financial Market Rates. Nepal Rastra Bank . Retrieved from: https://www.nrb.org.np/cmfmrates.php?search=02.

[100] World Bank (2018). Nepal Systematic Country Diagnostic. Washington DC: World Bank Group.

Figure 16: Constituents of Nepal's Financial Sector



Source: Nepal Rastra Bank[101].

1. ***Financial market and lending dynamics (informal financing):*** Despite the diversity of institutions, the financial market in Nepal is dominated by banks, as they account for 86 percent of total formal transactions in the same sector.[102] Some borrowers take loans from informal lenders when they do not meet all the supporting documents required by banks. The spread margin determines the efficiency and cost of financial intermediation in the formal market. In the case of Nepal, this spread stands moderately at 4.2 percent.[103,104]
2. ***Lending interest rate:*** The lending rate is the cost of borrowing faced by the private sector. This rate is normally differentiated according to the creditworthiness of the borrower and objectives of financing.[105] Findings from the 2019 IMF report depict that Nepal observed prolonged credit expansion, primarily supported by the high remittance inflow. In fact, as per the NRB,[106] the weighted average nominal interest rate of 91 days T-bills as of mid-April 2019

[101] Blagrave, P. Sodsriwiboon, P. International Monetary Fund (2019). IMF Country Report No. 19/61- Nepal Selected Issues. International Monetary Fund.
[102] Asian Development Bank. (2009). Nepal Critical Development Constraints. Asian Development Bank.
[103] The average spread rate of the world is approximately 5.5 percent. World Interest Rate Spread. World Bank Data (2020)
[104] Share Sansar. (2020, January 26). What is the current average base rate of commercial banks? Look at the minimum and maximum interest rate charged on margin type loan. Retrieved from Share Sansar: https://www.sharesansar.com/newsdetail/what-is-the-current-average-base-rate-of-commercial-banks-look-at-the-minimum-and-maximum-interest-rate-charged-on-margin-type-loan
[105] World Bank (2019). Doing Business 2019. Washington, DC: World Bank Group.
[106] NRB. (2019).

was 4.4 percent, indicating the excess supply of the fund in the market. However, in the case of informal financing, the interest rate could appear excessive. Anecdotal evidence suggests that people in rural areas still rely on informal sources of financing, such as taking loans from landlords at high interest rates (3 percent, 4 percent, or 5 percent per month), also known as *Meter Byagi*. This roughly translates to 36 percent, 48 percent, or 60 percent per annum. Such high interest rate may not reflect the scarcity of financing, but the high risk premium charged by lenders for unsecured credit transactions in the informal markets.

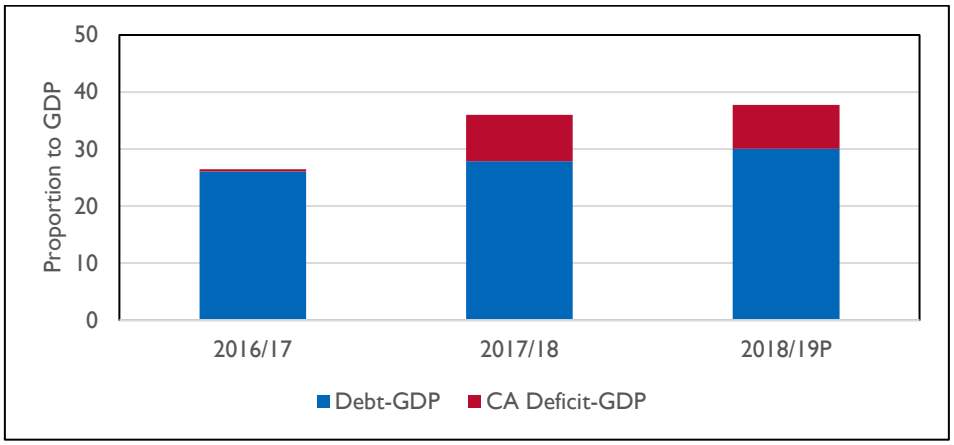
C. Inadequate International Finance: Not Binding Constraint

Capital is the key engine of economic growth, and in that, international finance contributes towards economic convergence.[107] International inflow plays a significant role in economic growth by promoting trade, particularly exports.[108,109] In this context, linking small- and medium-sized countries, like Nepal, with access to international sources of funding and market is critical to driving the country's economic growth. Although a small economy, Nepal is surrounded by vibrant markets and has the potential of expanding its trade with fast-growing economies in East-Asia and the Pacific.[110] However, the share of export to GDP declined as participation in the regional and global value chain is low, and the inflow of Foreign Direct Investment (FDI) is the lowest in South Asia.[111] All these factors offer potential sources of financing for Nepal.

The recent acceleration of investment is causing some tightness in supply in the financial market, which shows how quickly finance can become a binding constraint with the stimulation of the country's economic activities. On the supply side, Nepal's gross national savings fell short of the amount needed to finance gross capital formation, thereby resulting in a deficit that peaked at 10 percent of GDP in 2018/19. There also is evidence that the country increased external financing, primarily in the form of deficits in the current accounts, which reached 8 percent of the GDP. Furthermore, domestic and foreign debt increased by 16 percent and 30 percent, raising the debt to GDP ratio to 30 percent, a 5-percentage point increase since the earthquake.

[107] Krugman, P. (1994). The Myth of Asia's Miracle. Foreign Affairs. Retrieved from: Krugman, P. (1994). The Myth of Asia's Miracle. Foreign Affairs.
[108] Asian Development Bank. (2015). Sector Assessment (Summary): Transport, and Information and Communication Technology—Air Transport. Asian Development Bank.
[109] World Bank (2018). Nepal Systematic Country Diagnostic. Washington DC: World Bank Group.
[110] Ibid.
[111] Ibid.

Figure 17: External Financing



Source: Nepal Rastra Bank.

Although the market is showing some tightness in supply, finance is not yet a binding constraint to investment and growth. Given a low debt-burden, Nepal could still have accessed external financing if investment opportunities with remunerative returns existed. However, such access is limited to concessional loans since Nepal still lacks a credit rating, which is necessary to access the international commercial capital market. In addition, Nepal did not aggressively pursue financing from FDI, which remains low at 0.51 percent of GDP, and pales in comparison to the South Asia regional average of 2.66 percent.

Considering all the market data, there is growing evidence that the financial market is becoming tight, but finance is not yet a binding constraint to investment and growth in Nepal. Banks are not adequately rewarding depositors to mobilize domestic savings, and the GON is not aggressively attracting foreign capital through loans and FDIs.

2.1.2.6 Unsustainable (Robust) Post-earthquake Growth Rates

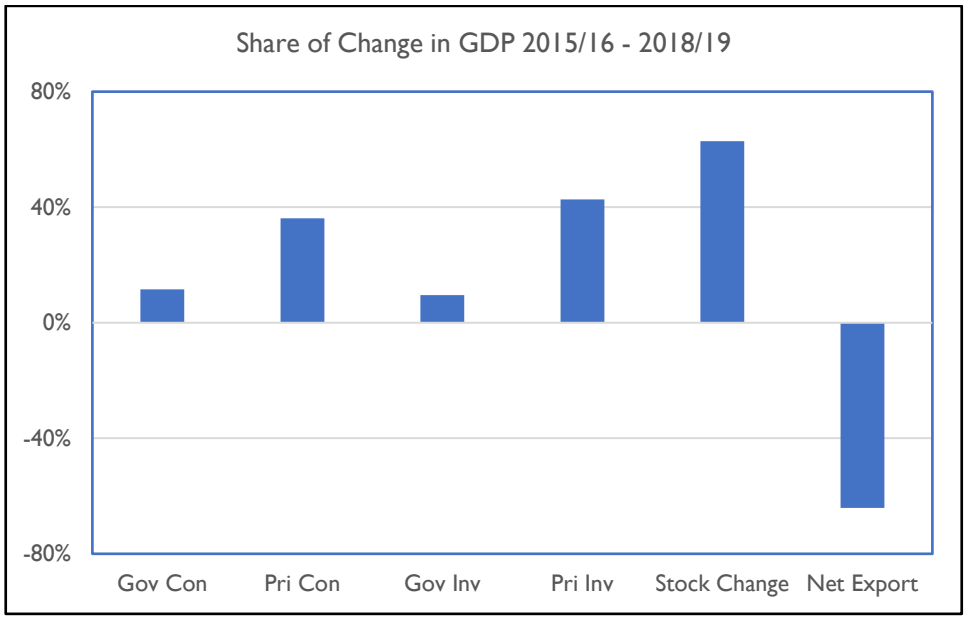
Finally, this study examines whether the rapid post-earthquake growth rate is sustainable, to assess if the tightness in the credit market as well as the widening deficits in several economic accounts will ultimately become a binding constraint to growth. There is a preponderance of evidence that Nepal's rapid post-earthquake growth is unsustainable. Absent any major reform to address barriers to growth or to stimulate the economy, Nepal's growth trajectory is expected to return to its low long-term trend of 4 to 5 percent once the pent-up demand from reconstruction activities is spent. This can be as early as next year.

A. ***Composition of capital formation point to a waning pent-up reconstruction demand:*** Nepal's National Planning Commission (NPC) initially estimated the total damage of the earthquake at $7 billion. Nepal's rate of public and private gross fixed capital formation (GFCF) averaged at 24 percent before the earthquake. If the same 24 percent rate is applied for the three years after the earthquake, there would be an excess of GFCF above the long-term trend due to reconstruction activities during the period 2016 to 2018, at 8 percent, 11 percent, and

13 percent. The real value of the sum of the excess GFCF over the post-earthquake period reached $7 billion, which is equivalent to the amount of earthquake damage. This is validated by the findings from a National Reconstruction Authority report that indicate 69 percent of the reconstruction of private housing, schools, health institutions, heritage sites, and government buildings was completed as of December 2019. There is, therefore, evidence that any reconstruction activities from here onwards would be minimal.

In addition, Figure 18 shows that the largest increase in aggregate demand in the post-earthquake period was contributed by "stock change." Before the earthquake, the long-term trend in the stock change was 16 percent of GDP. However, the earthquake and the embargo imposed by India disrupted supply chains in the country, and Nepali enterprises had to depend on their inventory to continue business operations. For this reason, stock change dropped by 5 percentage points to 11 percent in 2014/15, and by 11 percentage points to 5 percent in 2015/16. Nepali enterprises, therefore, used the following three years to re-build their inventory to normal levels, such that the stock change reached a high 25 percent to GDP in 2018/19. There is evidence that, at this high rate, the re-building of inventory to normal levels was reached and may have even been exceeded. There is, therefore, evidence that any stock change from here onwards would be minimal.

Figure 18: Post-Earthquake Investments

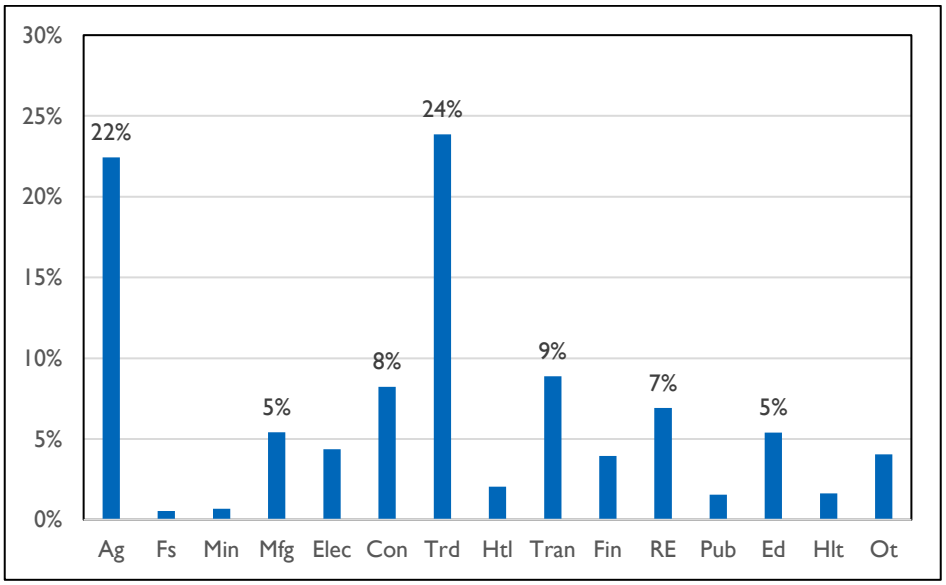


Source: Author's calculations based on NRB data.

B. ***Growth was not widespread, and agriculture and wholesale-retail trade dominated sectoral contribution:*** The rapid growth in the post-earthquake period was not widespread across sectors, suggesting a lack of fundamental economic drivers behind the acceleration of growth. In fact, in terms of the contribution by sector, close to half of the growth in FY18/19, was contributed by only two sectors, namely agriculture (22 percent) and wholesale and retail

trade sectors (24 percent) (Figure 19). The performance of both sectors is largely influenced by uncertain factors, such as seasonal monsoon weather for agriculture and the level of workers' remittance for wholesale and retail trade. For example, the volatility in the performance of the agriculture sector is demonstrated by the doubling of the growth rate in a matter of one year, from 2.7 percent in FY2017/18 to 5 percent the following year, primarily due to a good monsoon season. Concerning remittances, the 32 percent decline in the number of new migrants in FY2018/19 cast some uncertainty on the contribution of the wholesale and retail trade sector in Nepal's future growth.

Figure 19: Sectoral Contribution to FY2018/19 Growth



Source: Author calculations based on NRB data.

C. No component of aggregate demand can potentially offset reductions in GFCF once pent-up demand from reconstruction activities is spent: As mentioned earlier, there is strong evidence that the pent-up demand from reconstruction was fully exhausted. Hence, investment for the reconstruction of physical assets and re-stocking of inventory is not expected to drive growth beyond FY2019/20 significantly. The IMF's 6 percent 2020/21 growth projection for Nepal relies on new hydropower projects reaching operational stage, the contribution of tourism, and exports of goods and services. All these three sectors, however, face acute challenges and many downside risks factors. As a result, remittance-driven consumption is expected to re-emerge as the economy's main driver in the immediate future. But even this driver is surrounded by a downside risk as the number of new labor migrants decreased by 32 percent in FY2018/19.

The evidence presented above supports the conclusion that the recent acceleration of Nepal's growth was driven more by temporary factors, such as the reconstruction activities and the re-stocking of inventory, rather than by structural changes in the economy. This is further supported by the fact that the export-to-GDP ratio deteriorated and remained at a low rate of

10 percent. Given this conclusion, the tightness in the financial market may ease up and the national savings may catch up and sufficiently cover Nepal's financing needs for capital formation.

2.1.3 Conclusions and Recommendations

The scope of this study aims to identify the binding constraints that impede investment and growth in Nepal. It does not include identifying specific interventions or policy reforms. Nevertheless, insights and conclusions provided by this analysis may be useful when designing a policy reform agenda that will address those constraints.

Nepal has a vision to graduate to middle-income status by 2030 and accordingly, the GON undertook key reforms to eradicate poverty, sustain the growth of income, and improve income distribution. However, the problems highlighted in the report suggest that binding constraints remain and have impeded investment and economic growth. Using the HRV framework's decision tree and diagnostic questions, the study made the following determinations on the binding constraints facing Nepal's economy.

The study concluded that Nepal's unique natural capital presents both challenges and opportunities but is not a binding constraint to investment and growth. On the one hand, the country's landlocked location and mountainous terrain limit its access to seaports and road systems, its topography and biodiversity offer unique opportunities to grow special products (e.g., aromatic and medicinal plants), and to produce many agricultural products throughout the year, on the other. Furthermore, Nepal's abundant water resources offer tremendous hydropower generation potential of 83 GW, which is capable of meeting not only domestic demand but also the growing demand of neighboring countries in the region. Natural, religious, and cultural tourism assets offer varied attractions and many tourism opportunities that can earn foreign currency for the country. Nepal's arable land is limited but growing underutilization offer opportunities for land consolidation to increase the scale of operation and mechanization of farm operations, leading to increased productivity and operational efficiency. In addition, a larger volume of production under a consolidated system offers a stronger bargaining position in the procurement of inputs and sale of marketable surplus that can bring additional revenues for small-holder producers. In this regard, development partners could provide technical support to the government/agriculture cooperatives in piloting the concept in certain locations to prove its feasibility.

The study reached a conclusive determination that human capital is not a binding constraint to investment and growth. The high unemployment, high underemployment, and the high migration of workers for employment abroad, demonstrate that an excess supply of workers exists in the labor market. Moreover, the low return to education (see the section on returns to education) suggests that Nepali enterprises are not outbidding each other for limited human capital. The weak labor market outcomes suggest that Nepal lacks adequate demand for human capital, which is due to the country's limited economic and entrepreneurship activity and weak enterprise development. Therefore, Nepal needs to address the binding constraints identified in this study to accelerate economic growth and ensure remunerative returns on investments in human capital. In this regard, it is important to diversify to a strong manufacturing base to improve productivity and generate more and higher-paying jobs.[112] To do so, the promotion of entrepreneurship and strengthening of SMEs would be essential. Numerous

[112] Asian Development Bank. (2009). Nepal Critical Development Constraints. Asian Development Bank.

development partners are currently undertaking such initiatives, and its continuation will be important for economic development.

The ADB and MCC studies identified a limited supply of electricity and the high cost of transport as binding constraints that depressed the social returns to economic activities in the country. However, additional power generation capacity and imports from India allowed the GON to balance the electricity market, such that Nepali enterprises no longer consider a lack of electricity as an impediment in their operations. Similar improvements were made on the road infrastructure and transport facilities, but transport cost remains relatively high, which erodes the competitiveness of Nepali enterprises and limits their market opportunities in the world market In the case of telecommunications networks, significant improvement in the enabling environment over the years has stimulated the growth of the sector.

Given the critical role of infrastructure development for economic development,[113] Nepal should prioritize the development of quality infrastructure. Especially considering the country's geographical terrain, standard road networks should be constructed to connect the remote parts of the country to the urban market centers to serve better those marginalized by distance from markets. Likewise, though air transport is not a constraint to growth in Nepal, the ailing airport infrastructure should be upgraded for the ease of transport. To further ease the supply of electricity, the government should prioritize the development of required infrastructure (like transmission lines) alongside constructing hydropower plants. Donors are already supporting the development of roads, transmission lines, and hydropower generation. For instance, the World Bank granted $100 million as a part of the Nepal Energy Sector Development Policy Credit.[114] Likewise, development partners could jointly work with the government and provide technical support for a better project management system for these large infrastructure projects to break ground and reach operational stage in a timely manner.

The study found that economic activities in Nepal are not only constrained by insufficient reward (i.e., low social returns), but also by the considerable downside risk in realizing private returns due to micro risks associated with the challenges in the doing business environment, including corruption and the emerging risks associated with the growing macroeconomic imbalances resulting from fiscal and external deficits.

The study concludes that the MCC's determination that market failure – both information and coordination failure – is not a binding constraint still holds in Nepal's current economic developments. MCC cited Nepal's diversified export basket as evidence supporting its determination. However, this study found that some of Nepal's exports are not driven by comparative advantage considerations but by special preferential market access in India's import market under the India-Nepal bilateral trade agreement, while suppliers from other countries face prohibitive border duties. Furthermore, Nepal has failed to diversify into more complex products (those associated with high value-addition and high wages), but this is caused not by information and coordination failures but by the high cost of experimentation faced by entrepreneurs.

[113] UN. (2007). The United Nation Development Agenda: Development for All. UN . Retrieved from https://www.un.org/esa/devagenda/UNDA_BW5_Final.pdf..
[114] World Bank Approves First Energy Sector Credit in Nepal. World Bank (2018).

On micro risk, ineffective bureaucracy, deeply entrenched corruption, and unpredictable implementation of laws and regulations continue to impede both domestic and foreign investment. In addition, Nepali enterprises face a high cost and risk of doing business in the country. At every stage in their life cycles, from starting a business to operating one and up to liquidation, Nepali enterprises are burdened by cumbersome processes affecting business. Such challenges in doing business have placed enterprises at a disadvantageous starting position relative to competitors in other countries, and as a result, have limited their opportunities in the domestic and foreign markets. Recently, the GON established organizational mechanisms that will coordinate and monitor efforts of entities within the bureaucracy to improve the country's doing business environment. The donor community recognized this growing political will and is increasingly supporting the GON to advance policy and regulatory reforms that are necessary to improve the ease of doing business in the country.

On the macro risks, Nepal experienced growing political stability after the ratification of the constitution, the election of a supermajority in government, and the largely smooth transition to a federal form of government. However, macroeconomic imbalances and stability loom large as concern for investors. Nepal's unsustainable trade, current accounts, the balance of payments, and fiscal deficits have increased the likelihood of macroeconomic adjustments that may lead to a devaluation of the local currency, stronger inflationary pressure on prices, and higher taxes. This scenario will limit the anticipated ability of investors to retain returns on their investment, thereby affecting the level of investment and growth.

In its 2018 Article IV review of the economy, the IMF alerted the GON on this risk and recommended a scaling back on its expenditure (on items with least impact on growth) to better manage aggregate demand and inflation to avoid further overvaluation of the local currency, given the country's fixed exchange rate policy regime. Also, the IMF recommended improving efficiency in the use of resources by connecting public expenditure with well-established development plans. Other measures that the GON can undertake may include the following: a) adopting a growth-oriented tax policy, such as improving the tax base and/or lowering corporate tax rates; b) measuring interventions to channel bank lending towards productive investments (including all three sectors, namely agriculture, industry and service; and c) promoting foreign investment.

Nepal's economy is critically constrained by low private returns to investment (as elaborated above), not by low availability of savings. Over the last decade, gross national savings had generally exceeded gross capital formation, except for the post-earthquake period when reconstruction activities accelerated. Even during this period, however, Nepal's low real deposit and treasury bill rates, as well as the low external debt and FDI, suggest that financial institutions are not rewarding depositors to mobilize more savings and that the GON is not aggressively pursuing external capital. Hence, although savings are low, Nepal invests little because it does not have productive investment opportunities in which to deploy the resources.

Finally, the study found that the robust rate of growth that the country achieved during the post-earthquake period was fueled by the temporary boost in aggregate demand due to reconstruction activities. This rate is not sustainable for the following reasons: a) the composition of gross capital formation suggests that the pent-up demand from reconstruction activities is waning; b) growth was not widespread across sectors but was largely driven by the agriculture and wholesale and retail trade

sectors; and c) the absence of other components of aggregate demand, especially net exports, that can potentially offset the looming reductions in gross capital formation. As such, in the absence of any major reforms that will stimulate investment and trade, experts expect that the economy will revert to the remittance and consumption-driven growth, which the World Bank characterized as a high migration, low growth trap.

2.2 DEMOCRACY AND GOVERNANCE: PROMOTING A PRO-GROWTH POLICY REGIME IN NEPAL

Economic liberalization measures of the 1990s were initiated to institutionalize a market-based economy for which policy measures were taken on top of the governance structure guided by a conservative orientation. Rather than strengthening institutional capacity to promote and formalize the market, state governance was mired by archaic administrative processes and driven by rent-seeking behavior of the stakeholders. The environment further deteriorated as the political landscape failed to pay proper attention[115] to establish a competitive market system. Hence, a few large business elites who have close connections with political decision-makers dominated the private sector, and this situation prevails.[116] Formally, such businesses have endorsed a market economy. In practice, however, they were found to seek protection against competition from import of goods they produce while seeking duty-free access for goods they trade but do not produce. They prioritize easy trading, agency services, service sector, and convenient joint ventures while industrial investments and activities with long-term strategic contribution to the economy remain largely missing.

Likewise, the state of Nepal's political economy is such that the political actors and private sector representatives collude to advance their converging interests. For example, some of the leading businessmen are also parliamentarians, thus creating space for political influence in the market, corruption and growth of an unregulated privatize sector. The nexus between the political class and the businessmen have posed challenges to anti-corruption movements as well as to the broader governance mechanisms.[117]

As another example, businesses contribute to fund election campaigns and in return protect their interests by influencing policies. The political economy of the market system of Nepal is, thus, defined by the interlinkage between the private sectors with interest to impose uncompetitive practices, and the government and political parties with interest to impose political domination and gain discretionary authority over regulatory matters, which opens opportunities for corruption. In addition, Nepal failed to attract FDI, largely due to private sector protectionist policies.[118] Through associations, such businesses tend to lobby for favorable policy changes that protect them from foreign competition (see Box Story 1). For instance, when J. Walter Thompson, a multinational advertising agency, sought to enter the

[115] Post 1990s, Nepal's political climate underwent many transitions and instability. which shifted much of the attention of political leaders towards the country's political climate rather than the economy and business climate.
[116] Nepal Economic Forum. (2017). Political Economic Analysis of Business Houses of Nepal. Kathmandu: Department for International Development Nepal.
[117] Humagain and Subedi (2016). There's a Dirty Nexus Between Businessman and Politicians. Kathmandu: The Kathmandu Post. Retrieved form https://kathmandupost.com/interviews/2016/04/11/theres-a-dirty-nexus-between-businessmen-and-politicians
[118] Nepal Economic Forum. (2017). Political Economic Analysis of Business Houses of Nepal. Kathmandu: Department for International Development Nepal.

Nepali market and establish a subsidiary in Nepal, it took them over one and a half years of haggling and bargaining with the government, due to a strong local lobby group that tried to block and discourage their entry into Nepal.[119] Notwithstanding, the country is witnessing a gradual increase in investments in large production sectors from China, mainly in hydropower plants, cement factories, airports, railway, telecommunication, and other areas. This changed Nepal's position in the "balancing act"[120] between India and China, as well as expanded the contribution of the private sector in the economy.

Moreover, the country faces challenges in terms of weak implementation of legal safeguards and policies to prevent financial crime such as money laundering, capital flights and illicit foreign investment, which ultimately weakens the investment climate.[121,122] Although Nepal has the Restricting Investment Abroad Act and five different legislations on anti-money laundering in place, which makes it illegal for its citizens to invest abroad or have bank accounts in foreign banks, the International Consortium of Investigative Journalists reported that Nepalis made investments abroad through offshore entities.

With the onset of federalism post-2015, state restructuring from a unitary structure to a federated one and with a government that enjoys a historic supermajority in the parliament, a much greater degree of optimism for stability, economic growth, and opportunities to decentralize development benefits and make service delivery more effective and accountable is expected. However, the risks of jurisdictional overlap between the three tiers of government, the lack of clarity and coherence between policies and devolved powers, and the duplication of efforts remain high.[123]

The growth diagnostic analysis showed that many of the identified binding constraints impeding investment and growth in Nepal largely emanated from policy actions (or lack thereof) that the GON undertook over time. For example, GON policy positions that shaped the country's investment climate and the environment for doing business have impacts on public and private investment on infrastructure and the perception of investors on the risk of failing to retain a significant share of the return to investment. As such, the study assessed the policy formulation process in Nepal by addressing the following four research questions:

- Does the existing GON policy formulation process provide formal opportunities for the private sector to contribute systematically to policies? What hinders the private sector from engaging in proactive advocacy for pro-growth, business-friendly, and accountable governance policy reforms?
- Does the private sector have the capacity to advocate effectively for policy reforms? What policies does the private sector see as priorities for creating a favorable enabling environment? Are these in line with GON priorities?

[119] Shakya, S. (2019). Unleashing the Vajra. Haryana: Penguin Random House Private Limited.
[120] Being in between two giant economies – India and China – has adopted "the balancing act" to maintain its relations with both countries.
[121] Prasad, P. (2007). Is Nepal Suffering from Capital Flight? Kathmandu: The Himalayan Times. Retrieved from https://thehimalayantimes.com/business/is-nepal-suffering-from-capital-flight/
[122] Ojha S. (2019). Nepal Risk Being Blacklisted on Money Laundering. Kathmandu: Nepali Times. Retrieved from https://www.nepalitimes.com/here-now/nepal-risks-being-blacklisted-on-money-laundering/
[123] The World Bank Group. (2019). Country Overview: Nepal. Kathmandu: The World Bank Group. Retrieved from https://www.worldbank.org/en/country/nepal/overview.

- What opportunities exist for the private sector to facilitate (e.g., one-stop-shop) public services for the business community?
- What factors discourage or limit the ability of private sector actors in reaching out to vulnerable communities? How can development programs incentivize the private sector to benefit those communities?

2.2.1 Methodology and Limitations

The study adopted a combination of primary and secondary research, field visits, consultative meetings, and key informant interviews to gather the information needed to address the above-mentioned research questions. The study team performed thorough desk research to track down useful existing relevant pre-published information, including the following:

- Legal mandates that dictate subnational governance and private sector participation at various tiers of government.
- Published sources such as research papers and publications on private sector engagement at subnational governance levels published by research organizations, journals, and development organizations.
- Articles and content in the media especially vernacular media space.

A rigorous approach was adopted in the assessment, triangulation, and presentation of the data, which was supplemented by primary findings from consultative meetings with representatives of the private sector and municipalities, field visits (representatives from the Ministry of Economic Affairs and Planning of each province, representatives of Federation of Nepalese Chambers of Commerce and Industry (FNCCI), at district and provincial levels, institutions working at national levels for public-private partnerships, and entrepreneurs from various sectors), and key informant interviews. The literature review, in conjunction with the key informant interviews and consultative meetings, was crucial in the identification of key drivers, hurdles, and sensitivities in private sector engagement in subnational governance.

Understanding the problem at the micro-level shed additional insights, corroborated findings from the above analysis, and uncovered operationally relevant findings. For this purpose, the study team visited the local officials of all the seven provinces.

The study team conducted consultative meetings and key informant interviews with key stakeholder institutions to gather relevant, institution-specific information. This included extensive interactions with representatives of the private sector and municipalities.

2.2.2 Findings

The development theory underlying J2SR is that democratically governed countries with private sector-led, market-based economic governance anchored in a rules-based system are best positioned to advance along the J2SR. Under a market-based economic governance structure, a spirit of service and the pursuit of self-interest together provide agents with a self-sustaining logic that advances a country toward self-reliance. Democratic governance promotes accountability of both the public and private sector to serve the citizens and promote fair, ethical, and socially responsible business. In addition, it boosts economic growth by tapping under-utilized talent, and promotes democracy through wider involvement of stakeholders in decision making at all levels. In other words, democratic governance allows for inclusive policy formulation and self-correction when poor policies and weak institutions stymie the J2SR. When assessing the formal policymaking process of Nepal and the participation of stakeholders, it is evident that to be effective, the government cannot formulate policies on its own. The actual process substantially departs from the paradigm of inclusive participation, and the adverse consequences on the economy are many.

An ideal model of the policy process commences with an assessment of problems, followed by the implementation of evidence-based interventions, and concluding with systematic evaluation and corrective action if necessary, forming a policy cycle. Although there is no definitive codified process in Nepal, the national policy formulation process goes through six stages, as shown in Table 3. Section 2.2.2 describes the private sector's engagement (column 3) in this process. Section 2.2.4 covers the challenges and hurdles to policy reforms that advance competition. Last, section 2.2.6 addresses the challenges on advocacy capacity.

2.2.3 Policy Formulation Process in Nepal

Table 3: Nepal's Policy Formulation Process in Practice and Hurdles to Improved Policy Reforms

Process	Narratives	Private Sector Engagement	Challenges	Examples
Stage I: Agenda Building	Agenda building describes the process by which various factions attempt to transfer their interests to be the interests of public policymakers as a "collective" and "societal" interest (Cobb R., 1976). In Nepal, agenda building materializes through three streams: • Problem stream: Proposal for solutions to an existing problem in any area from the stakeholders. • Policy stream: Proposal for the need for a new policy from the stakeholders. • Political stream: a proposal from policymakers.	√ As the agenda setter	Manipulation in the agenda: While lobbying as an institution that voices the concerns of the private sector is normal, in Nepal the main problem is that there is an agenda capture, even at the institutional level, by the elites at the management level.	The presence of business association members in the regulatory agency's board was a major barrier for meaningful reforms to take place due to the inherent conflict of interest. For instance, airline association member is placed on the board of the regulating agency, and businesspeople sit on investment boards.
Stage II: Policy Analysis	Policy analyses define and outline the goals of a proposed policy and identify similarities and differences in expected outcomes and costs with alternative policies. Once the agenda is brought to policymakers' attention, it is analyzed to forecast future needs based on past and present conditions. Policy outcomes can be found in a variety of different forms—tangible outputs and less-tangible outputs for which the impacts are more difficult to measure. In the case of Nepal, stakeholders' consultations primarily drive the policy analysis process. Three primary institutions consulted in this process include: (a) The Ministry of Law, Justice and Parliamentary Affairs – to check if the policy adheres to the constitutional provisions.	√ As the influencer in the policy analysis	Frail policy analysis: While the process of consulting the three institutions gives a general idea on the alignment of the policy to national interests, it does not provide analysis on the policy goals, interventions, and outcomes.	A bill proposing the transfer of *guthi* land to private ownership and converting private *guthis* into public ones was presented in the parliament in June 2019. The proposal enraged the public, and the bill was later withdrawn. The co-chairman of the ruling party himself admitted that the bill lacked enough preparations before being presented.[124]

[124] Paudel, R. K. (2019). Dahal Admits Lack of Preparations Led to Controversy Over Guthi and Media Bills. Kathmandu: The Kathmandu Post. Retrieved from https://kathmandupost.com/national/2019/06/13/dahal-admits-lack-of-preparations-led-to-controversy-over-guthi-and-media-bills.

	(b) National Planning Commission – to check if the policy is in line with the national development plan and agenda. (c) Ministry of Finance – for financing the formulation and implementation of the policy. After the analyses and consultations consummate, the anchor ministry/line ministry drafts an approach paper for the policy grounded on the feedbacks and information gathered.			
Stage III: Committee formation and draft preparation	The line ministry forges a committee constituting representatives from the line ministry and relevant ministries, representatives from National Planning Commission, sectoral experts, representatives from relevant associations, and consumer groups, among others, to draft the policy based on the approach paper. However, since there is no penned process, the engagement with relevant stakeholders entirely depends on the interest of the line ministry. If needed, the line ministry also forms an inter-ministerial committee for policies that affect the jurisdiction of multiple ministries.	√ As a member of the policy drafting committee	Inefficiencies in the policy drafting committee are due to two factors: • Bureaucratic shuffle. • The discretion of the line ministries to decide the committee members.	In May 2018, the government started a crackdown on transport syndicates, giving the reins to the then-director-general at the Department of Transport Rup Narayan Bhattarai, who introduced stringent provisions against unruly transport entrepreneurs. However, he was later removed from the post and transferred to the ministry, after which the initiative slowed down and became almost non-functional.[125]
Stage IV: Draft preparation and consultation	The committee formulates the draft policy and advances it for several rounds of discussions to concerned ministries. The draft policy also is shared in various workshops, seminars, and meetings (including experts and stakeholders affected by policies) in a larger setting for feedback. The committee analyzes and incorporates the suggestions and recommendations received from this process. It then circulates the draft to relevant ministries and institutions for institutional recommendations.	√ As a negotiator on behalf of the private sector	Lack of element that checks and controls the rent-seeking behavior in policy discussions.	When the Indo-Nepal Trade and Transit Treaty came up for renewal in 1996, a group of businessmen from Nepal's FNCCI and India's Confederation of Indian Industries came together before official government talks were held and developed a list

[125] Giri, A. (2019). Top Bureaucrats are Getting Shuffled due to Conflicts of Interest. Kathmandu: The Kathmandu Post. Retrieved from https://kathmandupost.com/valley/2019/02/23/top-bureaucrats-are-getting-shuffled-due-to-conflicts-of-interest.

				of recommendations for their respective governments. Hence, products like vegetable ghee and acrylic yarn, among others, suddenly boomed after the treaty, by taking advantage of reduced customs duties.
Stage V: Finalization of draft	Based on the institutional recommendations, the draft is further modified and discussed with the relevant stakeholders for final approval. The committee hands over the final draft to the line ministry that forwards it to the cabinet for discussion.	√ As a negotiator on behalf of the private sector	Rent-seeking in policy discussion and modification (Explored in Box story 1)	In Nepal, one must get approval from the transport syndicate before getting a government license to run commercial vehicles.
Stage VI: Approval from cabinet	There are thematic committees in the cabinet consisting of ministers and secretaries of respective ministries that review the policies put forth for approval. Based on the analysis and recommendation of the thematic committee, the cabinet approves the policy and sends it to the president for final endorsement.	X	Collusion in approval: The state of Nepal's political economy is such that the political actors and private sector collude to derive interests off each other.	In the case a Nepali would like to apply for a business visa to Thailand, the Nepal–Thai Chamber of Commerce and Industry must endorse it.

2.2.3.1 Private Sector Engagement in Policy Formulation

The private sector is an essential counterpart to the government in framing policies that advance economic growth, promote business-friendly environments, and promote accountable governance. In Nepal, three umbrella organizations of the private sector broadly represent the sector in formal policy formulation processes:

1. **Federation of Nepalese Chamber of Commerce and Industries**: The Federation of Nepalese Chamber of Commerce and Industries (FNCCI) is registered as a national representative chamber of the private sector in pursuant of Section 3 of the National Directives Act 1961. It is the largest representative body of business organizations in the country with 112 District/Municipality Level Chambers, 103 Commodity/Sectoral Associations, and 20 Bi-national Chambers (including eight observer chambers).[126]
2. **Nepal Chamber of Commerce:** The Nepal Chamber of Commerce (NCC) was the first established Chamber of Commerce in Nepal. Currently, it has affiliations of more than 1,600 ordinary members and more than 8,000 registered firms.[127] Given its long history and legacy, the NCC still represents the private sector in many committees formed by the government.
3. **Confederation of Nepalese Industries:** The Confederation of Nepalese Industries (CNI) is an association of like-minded business groups that focuses only on the larger businesses, which are the substantial sectoral leaders in the country. It has four district chapters, 12 institutional members, and 127 corporate members.[128]
4. **Other actors:** Besides the three associations mentioned above, there are other actors in the private sector ecosystem. However, their representation in the policy formulation process is minimal.
    - **Cooperatives** – Cooperatives are recognized as Nepal's third pillar of development for economic development. As such, the GON provides cooperatives grants, seed money, capital subsidies, concessional loans, and rebates on customs. Given the reach and roles that were defined for the cooperatives in the economy, their participation in policy formulation is essential, but not extensive at present.
    - **Production-based private sector** – While there are specific commodity associations within the FNCCI, there are separate production-based associations like the Nepal Dairy Association, Cement Manufacturers' Association of Nepal, Federation of Handicraft Association of Nepal, etc., which have no mandatory roles in the policy formulation process.
    - **Consumer groups** – The role of consumer groups in Nepal is limited to environmental management and protection. Although consumers are the ones who are directly impacted by economic policies, they are not represented in the policy formulation process.

[126] Federation of Nepalese Chamber of Commerce and Industries. (2019). Introduction. Kathmandu: Federation of Nepalese Chamber of Commerce and Industries.
[127] Nepal Chamber of Commerce. (2019). Introduction. Kathmandu: Nepal Chamber of Commerce.
[128] Confederation of Nepalese Industries. (2019). Introduction. Kathmandu: Confederation of Nepalese Industries.

For the formulation of policies on businesses and economic growth, the private sector[129] serves as an essential counterpart that is involved in various stages of the policy cycle, and performing different roles, as described below.

- As the agenda setter: The private sector can call policymakers' attention to policy needs through the problem stream or policy stream. They bring issues to the attention of policymakers - those that affect the private sector, including their views on the issues and proposed solutions.
- As the influencer in the policy analysis: In the stage of policy analysis, the private sector provides key inputs on the areas that can be affected by the policy, including assessments on the positive and negative impacts of the proposed policy.
- As a member of the policy drafting committee: The FNCCI, as discussed in Table 2, is the national representative chamber for the private sector, and whose role is mandated by law in the drafting of any policy that affects the private sector. The CNI and NCC, on the other hand, are involved in the process on a voluntary basis only. In addition, for policies on specific economic sectors, the sectoral association may also be involved. For instance, the Independent Power Producers' Association – Nepal (IPPAN) is involved in the drafting committee, together with the FNCCI representative, on policies affecting the hydropower sector.
- As a negotiator on behalf of the private sector: The private sector representative assumes a policy negotiator role on policy issues that affect the private sector segment of the economy. Negotiation begins in the agenda-building phase, as the framing of the policy questions can determine the tone and framework in achieving the desired result. Moreover, as any policy formulation process always involves a contest of interest, skillful negotiation can be vital to find more efficient and integrative policy solutions on behalf of the sector.

Nepal's policy formulation process suffers from a lack of inclusiveness in the representation of the private sector. As such, the process has been captured by a narrow business interest group that has been granted by law the role to represent the entire private sector. As a result, it has not been uncommon for private sector entities to criticize policymakers for adopting policies that do not address their needs and demands.[130] The GON's policies often fail to advance a pro-growth regime, as its policy formulation process is weakened by: a) manipulations in agenda setting; b) frail policy analysis; c) inefficiencies in the policy drafting committee; d) rent-seeking in policy discussion and modification; and e) collusion in approval decisions. The next section further elaborates into these hurdles.

2.2.4 Hurdles to Policy Reforms

As discussed in Section 2.2.3, there are formal engagement structures and ample roles for the private sector to participate in the policy formulation process. However, the way the GON selects the private

[129] The term 'private sector' used henceforth implies the private sector associations in accumulation that represent the private sector of Nepal.
[130] The Himalayan Times. (2019). FNCCI, CNI, NCC to Develop Consolidated Agenda on Business Policy. Kathmandu: Himalayan News Service.

sector representatives tilts the power dynamics such that the resulting policy reforms fail to promote broader pro-growth policies such as market efficiency through competition. Some of these factors are described below as they impact each stage of the policy formulation process.

Manipulations in setting the agenda*:* When building an agenda, it is in the interest of both the policymakers and the private sector to minimize the risks and maximize the benefits in their favor. While formulating policies, policymakers assess who gains and who loses with their policy actions, as well as relevant risks. Policies are formulated based on these calculations.

In the case of Nepal, there exists a polarized private sector with a few large business groups dominating multiple sectors and a multitude of small firms with minimal dynamism and engagement, resulting in a narrow group of large firms unduly influencing policies. For instance, the World Bank's 2019 Country Private Sector Diagnostic Report states that a subset of larger firms obtained tax exemptions and found it easier to evade taxes.[131]

Generally, business groups were more successful than other groups in influencing public policy. For example, business owners or their high-level staff members participate in the political process as candidates, or they support political candidates in their election campaigns, granting them effective platforms to influence public policies. Also, businesses, as the main drivers of innovation and job creation, impact the performance of the economy and the general economic well-being of the citizens. In that position, businessmen can indirectly influence the likelihood of a government official to be reelected.

However, policymakers also must satisfy broader voter preferences. When preferences of a large share of voters conflict with the preferences of the business community, or a large segment of it, policymakers and parties need to decide whether to side with the business interest group or with the voters. Given the weak advocacy capacity of Nepali consumer groups, the concentrated preferences of the business community tend to win over the diffused interest of consumers and the general public.

Weak policy analysis: Ideally, policy analysis should be based on theoretically grounded and empirically validated robust models to determine if the policy will lead to the desired result. However, in Nepal (as discussed in Table 2), policy analysis is very rudimentary and depends heavily on stakeholders' consultations, which only generate opinions based on personal perception and self-interest rather than on objective information on the subject-matter of interest.[132] For instance, a bill proposing the transfer of *guthi* land to private ownership and converting private *guthis* into public ones was presented in the Parliament in June 2019. This enraged the public and the bill was later withdrawn. The co-chairman of the ruling party himself admitted that the sponsors presented the bill while still lacking a sufficient *ex-ante* impact assessment.[133] Given that the GON still lacks capacity to conduct *ex-ante* impact assessments, policy failures of the kind mentioned above remain highly likely.

[131] World Bank Group Nepal. (2018). Creating Markets in Nepal. Kathmandu: World Bank Group.
[132] Gelal, M. R. (2015). Reimagining Public Policy in Nepal. Nepal Administrative Staff College Discussion Series. Kathmandu.
[133] Paudel, R. K. (2019). Dahal Admits Lack of Preparations Led to Controversy Over Guthi and Media Bills. Kathmandu: The Kathmandu Post. Retrieved from https://kathmandupost.com/national/2019/06/13/dahal-admits-lack-of-preparations-led-to-controversy-over-guthi-and-media-bills.

Inefficiencies in the policy drafting committee: After completing the *ex-ante* impact analysis phase, the line ministry forms a committee to draft the policy. This phase faces two problems:

- **Bureaucratic shuffle** – In Nepal, authorities frequently transfer bureaucrats due to conflicts of interest with political leadership.[134] As a result, the activities of the drafting committee gets stalled as bureaucrats are transferred to another position, and the next bureaucrat has to be informed about the policy agenda, the stakeholders, and the analyses that have been conducted. This unnecessarily lengthens the policy formulation process.
- **Unclear roles of committee members** – The line ministry that forms the drafting committee often simply assigns a coordinator and leaves the roles of the other members of the committee with unclear boundaries. This reduces the committee's operational efficiency as personalities may exert undue influence and not be tempered by a clear boundary of roles.

Rent-seeking in policy discussion and modification: Once the first draft is ready, the sponsoring line ministry forwards the policy to various ministries and institutions for review and feedback. With the prevalence of conflicts associated with institutional rivalries, such as inter-ministry conflicts and inter-office conflict within a ministry, the time and costs sharply increase at this stage of the policy formulation process. It is also at this phase when different interest groups engage in aggressive bargaining and horse-trading to advance their interests.

Collusion in approval: The thematic committees in the cabinet review the draft that is finalized by the policy drafting committee, following consultations and after addressing feedback from the review process. At this phase, the political actors exert a significant role in advancing their interests in the final draft of the policy. It is common for the final policy that is approved by the cabinet to markedly diverge from the one drafted by the sponsoring line ministry, due to collusion in the approval decisions, as illustrated in the case of the Foreign Investment and Technology Transfer Act (Box Story 1).

[134] Giri, A. (2019). Top Bureaucrats are Getting Shuffled due to Conflicts of Interest. Kathmandu: The Kathmandu Post. Retrieved from https://kathmandupost.com/valley/2019/02/23/top-bureaucrats-are-getting-shuffled-due-to-conflicts-of-interest.

Box Story 1: Foreign Investment and Technology Transfer Act

The Foreign Investment and Technology Transfer Act (FITTA) 1992, amended in 2018, regulates foreign investment in Nepal. The amendment was envisioned to attract more foreign investments into the country, which is in dire need of capital for development. However, two of the clauses included in the Act made it controversial and setback the confidence of foreign investors.

Capping of the foreign investment limit at NPR 50 million: FITTA provides that the minimum cap for equity amount of foreign investment would be prescribed by the government. The demand posed by the private sector as characterized by its extractive nature, was to increase the threshold to NPR 100 million. The government, rather than impose differentiated slabs for various industries based on assessment on the performance of various sectors, prescribed that the minimum cap for equity amount of foreign investment would be minimum of NPR 50 million (USD 500,000 at USD 1=NPR 100). An analysis of historical FDI data shows that less than 10 percent of FDI would be able to comply with the higher capital requirement in the two sectors that contributed the highest share to Nepal's export earnings – Information and Communication Technology and Agriculture sectors.

Adding the dairy sector to the negative list: A prime example of the protectionist tendencies of the current private sector is the addition of dairy sector to FITTA's negative list, restricting any foreign investment in dairy. This addition came right after the domestic dairy industry strongly lobbied the government to restrict the entry of Amul, an India-based multinational company, from operating in Nepal. Moreover, the government itself admitted that the sectors in the negative list are meant to protect domestic businesses in travel, mass communication, and farm products, among others.

2.2.5 Hindrances to Policy Implementation and Evaluation

The lack of ownership and institutional coordination among policy implementers has affected the implementation of many policies in Nepal. Once a policy is formulated, its implementation has always been piecemeal and selective, making it difficult to evaluate the entire package of reforms, thus failing to derive value on invested resources in the reform processes (Box Story 2).[135] For instance, Nepal's Insolvency Act faced poor implementation since the commercial court could not be formed due to lack of human and financial resources. Nevertheless, commercial benches were formed, but with temporary judges who lacked expertise on dispute settlement and faced frequent transfers, thus hindering the effective implementation of the act.[136]

The emergence of a pseudo-private sector*:* Nepal's private sector has mainly remained captured by the elite group – the traditional business houses and large firms, be it under the aristocratic structure, the democratic structure, or the current federal structure. With arbitrage and rent seeking at

[135] Shakya, R. K. (2009). Why Civil Reforms Fail? - A Case of Nepal. Administration and Management Review, 21(2).
[136] Chaudhary A. 2018. Towards a Stronger Insolvency Framework. News and Updates: Samriddhi Foundation. Retrieved from https://samriddhi.org/news-and-updates/towards-a-stronger-insolvency-framework/

the heart of the private sector and public sector activities, the policies are influenced by the intersection of their interests, which often are too narrow to advance the general interest of the economy.

Weak demand for policy reforms: In addition, the dysfunction in the formal policy formulation process emanates from the supply side, as well as from the demand side. On the demand side, citizens, who were adversely affected by the economy's poor performance (e.g., limited employment opportunities for labor, limited investment opportunities for capitalist, and deteriorating purchasing power for consumers), have not yet initiated effective demand on the incumbent political leadership and the bureaucracy for them to undertake reforms and adopt sounder economic policies. The weak advocacy for change in the country is partly due to the absence of young, educated, and informed Nepalis, many of whom have migrated to work abroad because of limited, enabling employment opportunities in the country. On the supply side, remittances that migrant workers regularly send to families in Nepal (which reached $7.8 billion in 2018 and represented 25 percent of GDP) relieves any pressure on the government since it provides enough tax revenue for the government to continue to operate regardless of the economy's performance.

Box Story 2: Special Economic Zone: A lost Opportunity for Nepal

Nepal's Trade Policy 2009 envisioned the establishment of Special Economic Zones (SEZs) for export promotion. It was only in 2016 that the Special Economic Zone Act was promulgated. Within SEZ, industries would get income tax exemptions, waiver of custom duties on raw material imports, etc. The new SEZ bill endorsed by the cabinet in January 2019 reduced the mandatory export provision for industries operating within the SEZ to 60 percent of their production from 75 percent, which was enforced earlier. The bill also assured 100 percent income tax waiver in the first five years for industries established within SEZ and 50 percent income tax waiver after the first five years for those industries. However, lack of coordination between the government agencies led to the lag of SEZ by years. Until now, entrepreneurs have not shown interest to move their operations into SEZ citing reasons of inadequate infrastructure. This has put government's investment into risk.

2.2.6 Advocacy Capacity and Agendas of Private Sector

Although Nepal's private sector, on paper, has the space to drive the policy formulation process, its advocacy, in terms of representing the interests of the private sector broadly itself, is minimal.

In addition, the number of businessmen who also serve as powerful politicians and drive the agenda of the private sector has been continuously increasing in the past ten years. In the election of 2017 alone, five businesspersons were elected as members of the parliament (MPs), and more than 300 construction company owners were elected in the local elections.[137]

Thus, the current system cultivates crony capitalism in Nepal where businesses thrive, not because of the commercial merit of their enterprise or as a reward for the risk that they assume, but rather as a return on benefits derived through a nexus between a business class and the political class. Therefore,

[137] Pokharel, M. (2018). Nepali Times. Kathmandu: Himal Khabarpatrika.

the type of private sector entities that survive and thrive based on the commercial merit of their ventures, as tested in the market, is lacking in Nepal.

Institutional failure: The governance structure of the private sector associations has two tiers of governing bodies: executive committees (EC) and secretariats. For example, the EC plans and manages the activities and functions of the FNCCI and elects vice-presidents and constitutes the councils and various committees and forums. It also appoints a director-general who heads the FNCCI Secretariat. The secretariat only serves the function of overseeing the day-to-day operations and managing the business library, training unit, database/computer unit, display hall, and conference/meeting halls.[138] This gives the EC the power to steer the policy lobbying, which, as explained in the sections above, is driven by the narrow interests of elite businesspersons. Thus, with the function of lobbying vested in the executive committee members and not the secretariat, there is institutional failure in terms of advocacy for the wider interest of the private sector.

> "In Nepal, you do not need great ideas to become a great person. All you need to do is to hobnob with the right people." – Binod Chaudhary, Chairman of Chaudhary Group and Member of Parliament and Founder of Confederation of Nepalese Industries
>
> ***Source: Chaudhary, Binod (2016). Making it Big. India: Penguin Books.***

Lack of inclusive participation in policy advocacy: While FNCCI has been granted by the GON to represent the private sector in the policy formulation process, it does not represent the entire private sector of the country. The private sector includes:

- Businesses associations besides the FNCCI, such as NCC and CNI.
- Businesses and enterprises registered under the Social Welfare Council.
- The production-based private sector, like the Nepal Dairy Association, Cement Manufacturers' Association of Nepal, and the Federation of Handicraft Association of Nepal, among others. (There are commodity groups in each sector, such as dairy and handicraft groups, within the FNCCI as well; however, their agenda gets diluted in the association.).
- Nepali Start-ups.
- Businesses that are not a part of any associations.

In addition, policymakers in Nepal, including the private sector, decide who participates in the policy formulation process. This has disenfranchised many important stakeholders in participating in the policy formulation process, including ordinary citizens, civil society organizations (CSOs), academicians, youth organizations and think tanks, among many other actors of the society As a result, the GON acts slowly on policy reforms that advance the general interest of the Nepali people, and the policy regimes that impede investment and broader private sector development and economic growth, remain unchallenged for decades, even until now.

[138] Federation of Nepalese Chamber of Commerce and Industries. (2017). Secretariat. Kathmandu: Federation of Nepalese Chamber of Commerce and Industries. Retrieved from http://fncci.org/old/secretariat.php.

Box Story 3: Emergence of Nepal's Pseudo-Private Sector

Historically, Nepal's private sector remained closely tied to its aristocracy and a society that limited the rights of ownership to elites. It was only after 1990 that a new business environment emerged in Nepal whereby a formal private sector was created. Liberalization of markets, unrestricted expansion of trade networks, and industrialization followed the unshackled and reinvigorated private sector post 1990. The then-ruling government set forth the Privatization Policy 1991, Industrial Policy 1992, Foreign Investment and One-Window Enterprise Act 1992, the Industrial Enterprise Act 1992, and the Foreign Investment and Technology Transfer Act 1992, among others, to encourage private sector-led economic growth. In this backdrop, the private sector was upbeat with the year 1993-1994 registering 7.4 percent increase in national GDP and the value of export tripling in 1994. However, this bubble of reform burst with the volatility of Nepali politics defined by rampant corruption, bad governance and ensuing political instability. A weak and disoriented government quickly invited back the spirit of profiteering, racketeering, and patronizing that had plagued the private sector before 1990. Business lobby groups and labor unions defined policies using money or street-side bravado, while politicians seemed to make a quick buck before being replaced. In such a scenario, it was hardly surprising that no government had the time or the will to follow up on policy reforms.

With the nation's politics in limbo, the nexus of the small business elites continued to utilize their political and governmental patrons to frustrate reforms. Arbitrage grew into a major industry with the objective of working the system and making it play to one's favor. This form of myopic lobbying, with the objective of securing immediate profitability rather than long-term economic prosperity, created a business environment that thrives on corruption. Moreover, in fear of competition, many Nepali businesspeople preferred to adopt protectionist policies, fighting for positions in their respective trade associations, rather than trying to take their business to a regional or global level. Starting trade associations and reaching coveted positions in the associations, chambers or federations have overtaken the hunger for building competencies and expanding a pseudo-private sector in Nepal that persists.

Source: Shakya, S. (2009). Unleashing Nepal. Penguin Books India.

2.2.7 Policy Priorities of the Private Sector and Their Alignment with GON Priorities

The private sector associations that are currently in the position of influencing public polity survive on the following four key market strategies:

- Market power (i.e., cartel and monopoly) rather than through commercial competition.
- Compromise on quality of goods and services.
- Lenient tax provisions through collusion with the government.
- Policy-driven artificial trade arbitrage rather than a production based on comparative advantage.

These strategies only serve a few elite businesses and not the entire private sector. In addition, private businesses and associations of Nepal are often dragged into high profile cases of corruption, smuggling, black-marketing and adulteration, selling fake products, cartel-type collusion, and outright bribery. Such poor governance practices do not serve the broader interest of the general public and have also led to the collapse of many businesses.[139]

On the other hand, the ruling party follows a socialist ideology, perhaps to gain public popularity, so the political discourses focus largely on fundamental rights advocacy, and economic agendas remain a low priority. Amidst these circumstances, businesses and firms nationwide are facing a "double burden," where, on the one hand, their voices are not heard, and on the other, revenue targets of the government to meet its socialist schemes burden them. In sum, the private sector is a key driver of policy reforms, but the current engagement is resulting in inadequate market reforms due to a policy process that is easily captured by the vested interest of owners/managers of large businesses that do not represent the general interest of the entire private sector in Nepal.

2.2.7.1 Public-private Collaboration to Facilitate Public Services for the Business Communities

The fundamental basis for national economic development requires the public and private sectors to adhere to the view that the nation is a corporate or business entity, jointly owned by both sectors and working in pursuit of shared goals. For this, it is essential to increase the efficiency of the public sector to yield reforms and services that unleash the power of the private sector to create wealth and jobs, and help communities prosper.

Post 2015, Nepal transitioned from the unitary government structure to 753 local government units, seven provincial governments, and the federal government. With the advent of this structure, the subnational governments are equally important stakeholders with powers to formulate pro-growth policies in coordination with the private sector, as granted by the new Constitution. Based on the framework of the National Planning Commission, development projects are identified according to the priorities of the national, provincial and local government. When it comes to boosting domestic private sector, the local government, being the closest unit of government to businesses, is best positioned to advocate for private sector development and design priorities accordingly. However, research suggest that for local governments more capacity is required to institutionalize the restructuring process of local governance, increase citizen engagement in local governance system, build new partnerships in changing

[139] Kharel, S., Magar, S., Chaurasiya, N., Maharjan, S. & Rijal, C.P. (2019). Functional transparency and accountability in the Nepalese corporate sector: A critical assessment. Quest Journal of Management and Social Sciences: Corporate Governance Edition, 1(1), 1-25. Kathmandu: Quest Scientific Publications.

context, enhance technical, administrative, and fiscal capacity for effective service delivery, and formulate the essential laws, acts, and regulations.[140] However, local governments lack the capacity to efficiently use scarce resources, and execute their plans and budgets without proper guidance from a full-fledged development plan, according to the IMF. Similarly, at the federal level, the regulatory environment for doing business is weak, which creates high cost and risk of doing business burden on Nepali enterprises at every stage in their life-cycle. From starting a business, to operating one, and up to liquidation, Nepali enterprises are burdened by cumbersome business and property registration, weak contract enforcement, long waiting time in getting electricity and in dealing with construction permits, high collateral credit requirement, and uncertain rules in resolving insolvency. Further, such a weak regulatory environment opens many opportunities for corruption to creep in. Such constraints on business and investment climate can only be addressed at the federal level for which there is the need for enhanced cooperation between the federal government and the private sector.

In the case of Nepal, there were various initiatives from multiple agencies to increase private sector capacity by supporting them in terms of projects and the establishment of entities/groups/centers within the association and training them for the skilled workforce. However, once the support phases out, the initiative loses relevance, as existing private and public institutions fail to adopt and absorb the mechanism internally. One prominent example of the failure to adopt a good mechanism that fosters private sector growth is that of the Nepal Business Forum (NBF).

NBF functioned as a non-partisan agency that worked together with the private and public sectors for economic development. In its lifetime, NBF recommended 137 reforms (two of which are elaborated in Appendix 28), of which 52 were implemented.[141] However, NBF dissolved after 2016, for the following three reasons:

1. **The forum was institution heavy:** To encapsulate the segments of Nepal's fragmented private sector, NBF had three committees and six sectoral working groups. Additionally, it had four levels of hierarchy with the Prime Minister chairing the highest tier, the Ministry of Industry chairing the second tier, working groups, and committees at the third tier, and the Secretariat at the fourth tier. This rigid and top-heavy organizational structure created coordination inefficiencies that raised the cost of NBF's operation.
2. **The International Finance Corporation stopped financing NBF**: The South Asia Enterprise Development Facility (SAEDF), which was managed by the International Finance Corporation (IFC) in partnership with the UK Government and the Norwegian Agency for Development Cooperation, financed the NBF.[142] When the funding to the SAEDF stopped, it was difficult for the IFC to continue managing NBF. Due to the lack of financing, the forum could not self-sustain without receiving financial support from institutions. There were selected

140 Acharya K. (2018). Local Governance Restructuring in Nepal: From Government to Governmentality. Dhaulagiri Journal of Sociology and Anthropology Vol. 12, 2018 PP 37-49. Retrieved from https://www.nepjol.info/index.php/DSAJ/article/view/22178/18919

[141] New Business Age. (2013, 8 7). IFC is Set to Play a Key Role in Nepal. Kathmandu: New Business Age (P) Ltd. Retrieved from https://newbusinessage.com/MagazineArticles/view/388.

[142] International Finance Corporation Nepal. (2013, January 18). IFC Supports Reforms to Enhance Business Growth in Nepal.

development partners that wanted to fund only selected working groups of the NBF based on their strategic goals, but none came forward to finance the entire mechanism.

3. **The private sector renounced the NBF:** The IFC ran mechanisms like the NBF in multiple countries. When the IFC mechanism exits such forums, it is usually absorbed by the private sector. However, Nepal's case is a unique one, where the extraction-based, pseudo-private sector renounced the mechanism. This is primarily because of two reasons: a) the private sector associations were not committed enough to invest the time and resources required to operate the NBF, and b) a non-partisan body, like NBF, did not serve the best interests of the private sector associations, which already had formal and informal structures to influence the policy formulation process and advance their narrow interest. In its final year, the IFC handed the NBF over to the Ministry of Industry, Commerce, and Supplies, which allowed the NBF to disband.

Hence, to create an enabling environment for businesses and enterprises to flourish, there must be non-partisan agencies that can be: a) inclusive to advocate the general interests of the entire private sector, b) objective in terms of analyzing and suggesting policy reforms, and c) empowered to steer the policy formulation process in coordination with the policymakers. Such roles can be performed by truly representative business associations in coordination with policy institutes, as well as research and training centers, collectively referred to as *think tanks*.

Think tanks that can blend local and global knowledge for developing innovative policy prescriptions to Nepal's socio-economic challenges should be acknowledged as key stakeholders in the policy formulation process. Global examples, such as the Brookings Institution, Chatham House, Carnegie Endowment for International Peace, and Council on Foreign Relations, are the leading institutions whose policy prescriptions and research outcomes serve as a valuable asset for governments in forming policies and have impacted the global political economy immensely. Nepal, too, needs to provide an enabling environment for such policy think tanks to operate in the country so that objective and expert analysis of policy and far-reaching policy prescriptions can be drawn from them. There are already several such institutions within the country, but lack of adequate resources and lack of access to proper data from government sources restricts the scope and quality of research that such institutions can perform.[143]

To help such institutions overcome resource constraints, the government should explore options of granting tax concessions to businesses and firms which contribute financial resources to them. Similarly, the government can support them by providing a facilitating environment for operations. One such way could be by easing data sharing with research institutions so that their research yields better results. International community support also will help overcome resource constraints and put these institutions on the world map.

2.2.8 Enhancing Private Sector's Reach to Vulnerable Communities

For the private sector, the predominant motive of existence is to meet the profit objectives of owners/investors/shareholders, which requires calculated financial risks. Reaching out to vulnerable communities, on the other hand, is a societal cause that may not align well with the primary motive of the private sector. However, the private sector can contribute to lifting the plight of vulnerable

[143] Shakya, S. (2019). Unleashing the Vajra. Haryana: Penguin Random House Private Limited.

communities by doing the best at what they are good at, such as improving market efficiency and performance, creating employment opportunities, and supplying the market with affordable products and services that benefit everyone, including vulnerable groups. Even if the private sector intends to reach out to the vulnerable communities, it is constrained in part because vulnerable people in Nepal often are geographically far from the market and are constantly moving, which increases cost and risk. Another factor may be that the lack of open competition reduces the extent to which additional actors are looking for opportunities and approaches to serve niche markets. Unless law mandates it or models of expanding reach are subsidized, piloted, and shown to be cost-effective, it is less likely that the private sector will voluntarily reach out to such communities. Few regulatory authorities of Nepal have used various policy tools to ensure that private sector extends its reach to vulnerable communities, two of which are explained below:

1. One way for the private sectors to reach out to the vulnerable communities is through the Corporate Social Responsibility (CSR) mechanism. In Nepal, the Industrial Enterprise Act 2016 (2073) mandates CSR to be applicable to only certain industries based on (a) investments in fixed capital or (b) annual turnover. Similarly, the NRB mandates that BFIs allocate at least 1percent of net profit and deposit the same in a separate CSR fund. However, there are no such compliance requirements for non-manufacturing businesses, such as the trading businesses, that comprise the major segment of the Nepali economy.
2. Another such policy instrument is the deprived sector credit policy directed by the NRB, which is designed to meet the microcredit demand of a poorer and weaker section of the country. Under this policy provision, commercial banks are directed to lend up to 3 percent of their total loan outstanding to economically-disadvantaged people, including socially-deprived women, indigenous groups, lower-caste individuals, blind and/or hearing-impaired individuals, disabled, craftsmen, artisans, small and marginal farmers, and landless people.

In addition, to reach out to the vulnerable communities in the federalized structure, it is essential to promote public-private partnership projects at local levels and ensure meaningful community engagement. Since the operations of local governments are most closely tied to the public compared to the rest of the government, local governments could step in to address the needs of vulnerable communities in their constituencies, and the donor community could help facilitate this process.

2.2.9 Conclusions and Recommendations

The following are recommendations on the approaches that need to be taken to strengthen private sector engagement in the policy formulation process of Nepal. Donors may find their roles among the following pathways:

1. **Broaden participation:** While the formal policy formulation process envisions FNCCI to represent the concerns of the entire private sector, there is inadequate participation from stakeholders, aside from the pseudo-private sector actors (small business, academics, and civil society) to ensure a wider variety of beneficiaries' perspectives to generate pressure on the government to carry on the reform process. This not only means including representatives of multiple groups and actors (consumer groups, media, academicians, women's groups, cooperatives, ethnicities, etc.) but also that the consultations should take place at multiple levels

(local, district, provincial, and national). Moreover, some businesses are not affiliated with private sector associations.

2. **Decentralize process and increase transparency*:*** The Constitution of Nepal demands that under the federalized structure, the policy formulation process should also be decentralized. This will require that the policymakers reach out to the businesses at the local and provincial levels for consultation when dealing with business policies, given those small and medium enterprises that constitute the largest proportion of the economy are present at those levels. On the other hand, the subnational governments also have vital roles to play since many jurisdictions of the central government are passed down to the subnational governments. In turn, these subnational governments have an opportunity to better engage with businesses in their regions, work towards promoting the business environment, and facilitate investments in their provinces. In addition, it is imperative to make the process more transparent so that the media can play a role in informing the public about the policy outcomes and stimulate their political actions (e.g., lobbying or votes in elections) to hold their representatives accountable.

   Currently, a national-level program, known as the Local Governance and Community Development Program, is being executed by the government and aims to contribute towards poverty reduction through inclusive, responsive, and accountable local governance and participatory, community-led development. One of the key outcomes of the program is citizen-centric policy development that encompasses two outputs:

   - Refined policy on local governance and improved interagency cooperation.
   - Policies developed for devolution and federalism.

   Donors can help introduce similar projects that can strengthen the institutional capacities of subnational governments to formulate inclusive business policies and enabling business environments in their constituencies and foster business-friendly policy reforms.

3. **Augment the capacity of secretariats of business associations**: There is a need to increase the capacity and role of the secretariats in driving the business-related policy formulation process. For this, four steps are needed:

   - Strengthen the research unit of the associations at all levels to advocate for an evidence-based policy agenda and realistic policies.
   - Strengthen the advocacy capacity of secretariats of the subnational chapters of the associations.
   - Enhance engagement with the secretariats of the subnational governments to conduct projects.
   - Professionalize the business associations by helping them engage full-time incumbent position holders with the associations.

   Development partners support the government in boosting their technical capacity in terms of policy planning. For instance, programs, like the Policy Reform Initiative and Strengthening National Planning and Monitoring Capacity program, are aimed at improving the capacity and environment within the government for policy analysis, formulation, and implementation quality

analysis of evidence and existing policies to inform policymaking and planning. Hence, donors can help the corporatization of the secretariats, as well as build their technical capacity.

4. **Reinforce public-private engagement platforms:** Currently, there is mistrust between the interests of the private and public sectors. Therefore, there needs to be engagement mechanisms where both parties can come together and share their concerns on policy reforms. Public-Private engagement platforms like the Nepal Business Forum could be recreated to increase engagement between the two parties and facilitate communications and build trust to achieve a common development agenda. For this, efforts are required to build a collective, broad-based commitment from the public and private sectors, as well as the donor community, to cope with necessary resistance from vested interest groups.

5. **Improve the business environment:** Nepal ranks high in liberal democracy and open government indicators compared to other low- and middle-income countries. However, citizens, who were adversely affected by the economy's poor performance (see SEED and Returns to Education sections), have not yet employed effective measures for incumbent political leadership and the bureaucracy to undertake reforms and adopt sounder economic policies. Weak advocacy for change in the country is partly due to the absence of young, educated, and informed Nepalis, many of whom have migrated to work abroad because of limited, enabling employment opportunities in the country. In addition, remittances that migrant workers regularly send to families in Nepal (which reached $7.8 billion in 2018 and represented 25 percent of GDP) provide enough tax revenue for the government to continue to operate regardless of the economy's performance.

   To improve the business environment more broadly and develop a more favorable environment for businesses to create employment opportunities and retain young and educated Nepalis (see the section on Returns to Education) with interest in advocating for pro-growth economic policy reforms, it will be important to improve accountability, governance, transparency, and professionalism. Two supportive measures follow:

   - **Encourage foreign direct investments and technology transfer** - Foreign companies bring global experience and best practices in corporate governance, increase competition and technology transfer, as well as force local companies to emulate best practices to keep up with the competition.
   - **Identify individual champions** - Politics and corruption within business associations are deep-rooted and difficult to eradicate. As such, a better approach may be to identify and work with individual firms and businesspersons who can champion the cause of private sector development.

6. **Undertake *ex-post* policy analysis:** *Ex-post* policy analysis is designed to evaluate past policy performance (e.g., in terms of effectiveness, transparency, and distributional fairness) to reach policy objectives and includes a wide range of methods by an objective and independent third party entity (e.g., civil societies, universities, and think tanks). Such analyses are a major part of the policy cycle, based on which new agendas are set, and prevalent policies are revised to suit the context.

To enhance the advocacy capacity, neutral, independent ex-post evaluations should be performed by think tanks to address this vacuum. While these think tanks can self-adhere to ethical and good corporate governance, donors can help such think tanks adopt global standards in governance, internal control, human resource management, and research quality.

7. **Improve corporate governance of private sector:** To help promote a rules-based economic system, the private sector has a role to contribute by improving corporate governance. As a growing number of firms adopt good corporate governance practices, the benefits will not be limited to raising efficiency and improving access to capital by the firm, but, rather, its practice of transparency and accountability will foster an environment that does not reward corrupt practices, and, hence, benefit all firms.

   Some of the ways to promote good corporate governance is through having robust legal and regulatory requirements, institutionalizing a comprehensive ethics program, and, most importantly, practicing corporate ethics by senior executives as a culture of doing business. While self-compliance would require the zeal from executives themselves, donors can support businesses institutionalize an ethics program by introducing international best practices on good governance.

3.0 SOCIAL, ENVIRONMENTAL, AND ECONOMIC DEVELOPMENT

3.1 EXPANDING TRADE AND INVESTMENT TO FUEL ECONOMIC GROWTH

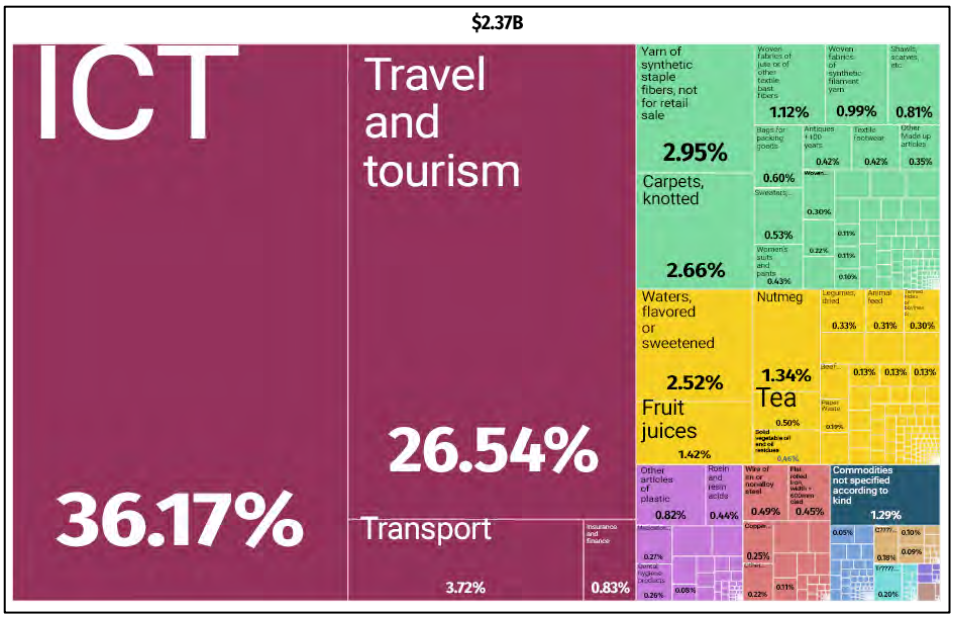
3.1.1 Introduction

Countries that have undergone transformational economic development, including Thailand, South Korea, and, more recently Vietnam, share five experiences. First, the investment rate accelerated (doubled in some cases) and was sustained over more than a decade, leading to productivity growth and enhanced competitiveness. Second, this growth in investment happened as those countries increasingly oriented their economies toward the world market and increased exports, which created more market opportunities that further incentivized investment. Third, as exports expanded, the share of high value-added products increased in the country's export basket, reallocating resources from less productive to more productive sectors.[144] These mutually reinforcing trade and investment dynamics resulted in rapid and sustained economic growth and ultimately brought about the country's economic transformation. Fourth, per capita income increased exponentially, and, fifth, population growth declined significantly.

Nepal's low long-term growth rate of 4.2 percent lags its South Asian neighbors by 2 percentage points. The country's weak trade sector created limited market opportunities to incentivize private fixed capital formation, which hampers growth. Nepal's exports are concentrated on a narrow and low-value product base (Figure 20)[145] that relies on a limited number of exports and trading partners, India being the largest export destination (Figures 21, 22).[146] This increases the country's vulnerability to changes in global demand.[147] Trade gains in the mid-1990s, when export to GDP ratio peaked at 26 percent, eroded and the export ratio declined since, reaching below 10 percent, which is an all-time low over the last two decades. During this period, the contribution of the manufacturing sector to GDP also decreased by almost 5 percentage points, from approximately 10 percent in 1995 to 5 percent in 2018 (Figure 23).

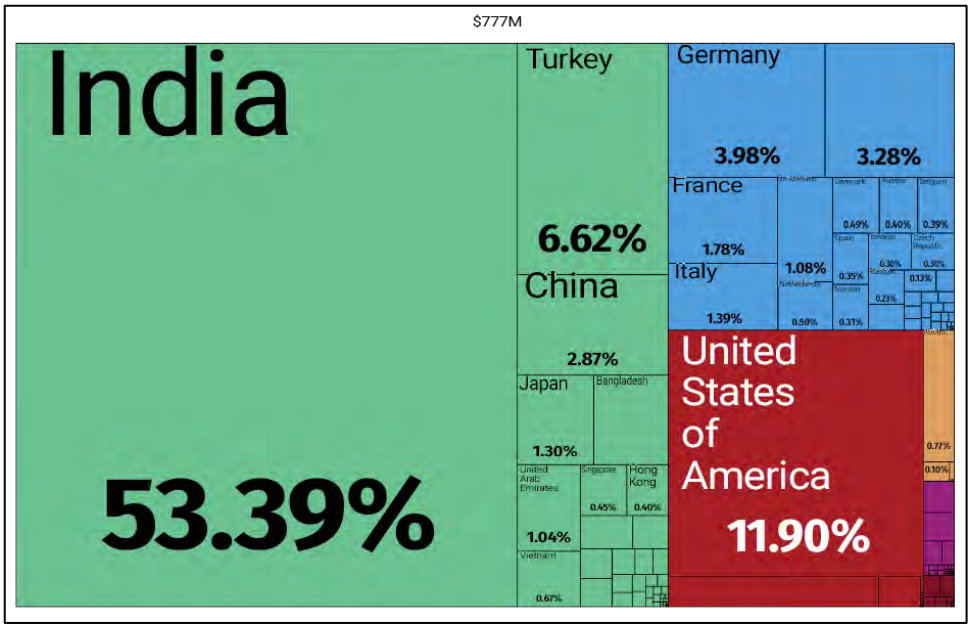
[144] Yueh, L. (2018). *The Great Economists: How Their Ideas Can Help Us Today.* New York: Picador Paperback.
[145] The following figures from the Atlas of Economic Complexity are not editable and, as they include all products exported, thus contain products for which text will not be legible as well.
[146] Acharya, K. R. (2019). Nepalese Foreign Trade: Growth, Composition, and Direction. NCC Journal.
[147] IMF. (2015). Make in India: Which Exports Can Drive the Next Wave of Growth? International Monetary Fund..

Figure 20. Nepal's Exports of Services and Merchandise Products



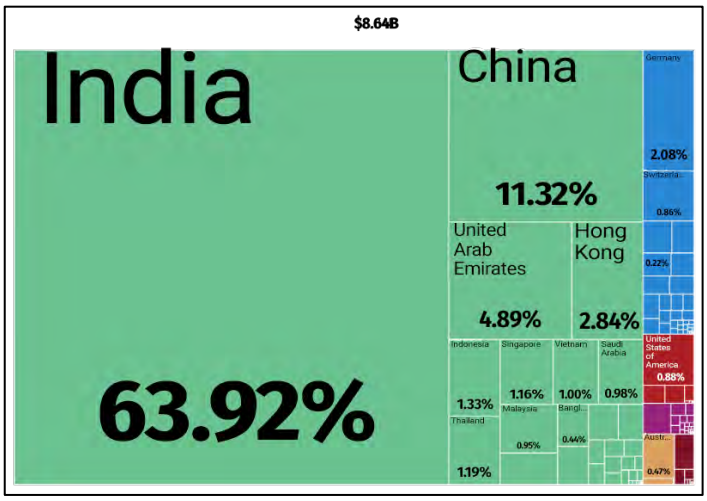
Source: Atlas of Economic Complexity (http://atlas.cid.harvard.edu/).

Figure 21. Nepal's Export Destinations



Source: Atlas of Economic Complexity (http://atlas.cid.harvard.edu/).

Figure 22. Nepal's Import Sources



Source: Atlas of Economic Complexity (http://atlas.cid.harvard.edu/).

In contrast, Nepal's imports increased at an unsustainable pace, creating a staggering trade deficit of $11.4 billion in 2018/19. This unsustainable trade deficit trajectory could deplete the country's foreign reserves to precarious levels.

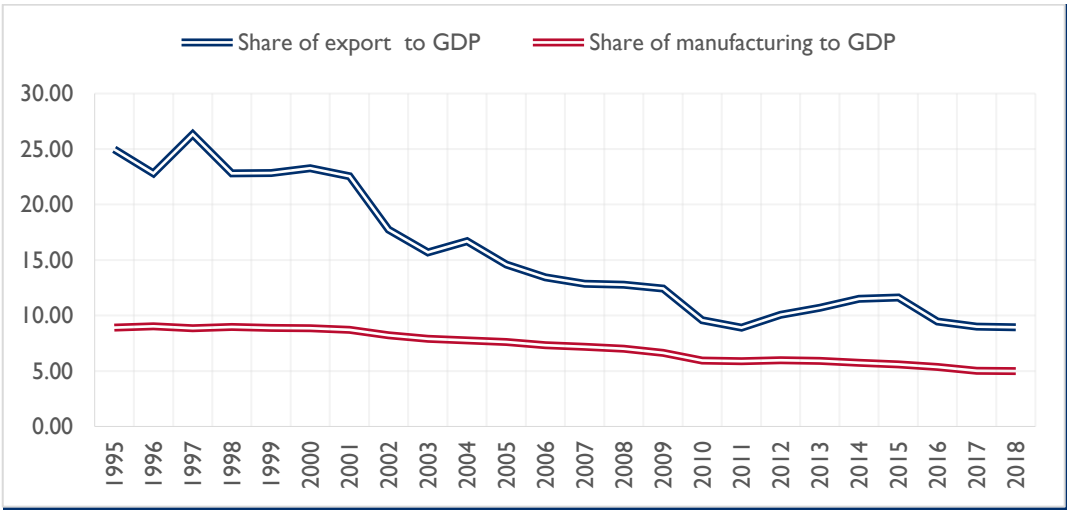
To graduate to a lower middle-income country, Nepal must accelerate trade and investment by diversifying into higher value-added export products (e.g., promoting the manufacturing industries) and by diversifying export destinations.[148]

This study develops an export opportunity map (EOM) based on Nepal's comparative advantage and world market developments, to assess the country's export opportunities and challenges. The EOM can inform Nepal on changes in the comparative advantage of products in its export basket as well as about developments in the world market regarding those products. In addition, the study adopts the product space analysis to develop a roadmap for product diversification toward higher value-added products that contribute more to growth.

Above all, diversification—both product and geographic—has a significant impact on increasing trade revenue and enhancing growth. As countries relying on a limited export basket are vulnerable to global demand,[149] this study aims to examine the development of Nepal's trade sector by identifying exportable products and potential markets. It used the EOM[150] to examine Nepal's export situation within these dimensions. In this context, the EOM identifies the products that Nepal needs to focus on or discard, based on the country's production abilities and global demand. In sum, Nepal needs to prioritize products in high demand that can be produced domestically at a competitive cost.

[148] ADB. (2017). Nepal's Development Context and the Role of Trade Facilitation. ADB.
[149] Ibid.
[150] EOM helps to examine the trade status of the country based on domestic ability to produce and world market scenario. USAID/Nepal's Monitoring, Evaluation and Learning Activity

Figure 23. Comparison Export to GDP vs. Manufacturing to GDP



Source: World Bank Development Indicators (2019).

The research question that this study is trying to examine is: "How can Nepal expand the role of exports (merchandise and services) to incentivize investment and drive economic growth?"

3.1.2 Methodology and Limitations

3.1.2.1 Methodology

Export Opportunity Map (EOM)

The EOM used a revealed comparative advantage (RCA) measure to evaluate the domestic ability to produce goods. The study used world and Nepal export data for the period 2010 to 2017[151] from Harvard's open-source data repository, Dataverse.[152] The study grouped the data into three time-periods, 2010-2011, 2012-2013, and 2014-2017, and used the average of the RCA in the analysis and the value of world export, to remove the year-to-year variations in the data.[153] The analysis excluded Nepal trade data from 2015 to 2016 to avoid the 2015 earthquake's impact as a confounding factor. The EOM and RCA methodologies are explained below and in greater detail in Appendix 14.

Determining the potential of the product through Revealed Comparative Advantage: The analysis used the RCA to measure the domestic ability of the country to produce goods. As defined by IGI Global (2019),[154] "The Revealed Comparative Advantage is the ratio of two shares. The numerator is the share of a country's total exports of a commodity of interest in its total exports, and the denominator is the share of world exports of the same commodity in total world exports. The RCA

[151] The dataset included 2017 as the most recent period with complete observations for all relevant variables.
[152] Retrieved from https://dataverse.harvard.edu/.
[153] The mentioned time frame was further classified as period 1 (2010-2011 to 2012-13) and period 2 (2012-2013 to 2014-2017).
[154] "What Is Revealed Comparative Advantage Index," (No date). IGI Global. Accessed March 3, 2020. https://www.igi-global.com/dictionary/revealed-comparative-advantage-index/60863.

takes a minimum value of 0 with no upward limit. A country is said to have a comparative advantage if the value is more than one."[155] The study determines whether demand is expanding or shrinking in the global market based on changes in the world export value of goods.

Determining the world market trend (expanding or shrinking): The study used the change in total world export value between two periods (period 1: the average for 2010-2011; period 3: average for 2012-2013) as an indicator of the world market situation. The first case considers the average RCA during period 2, where an RCA greater than one means that Nepal has a comparative advantage to produce the good, and no comparative advantage otherwise. Likewise, the first case considers the world market situation as expanding when the difference in average world export value between 2012-2013 and 2010-2011 is positive and shrinking otherwise. The second case considers the average RCA for 2014-2017 and determines the world export market situation by comparing 2014-2017 to 2012-2013. The third case uses the results of the second case and adds the information on the direction of change in the RCA between the period 2014-2017 and 2012-2013, as well the pace of change in the world market.

Change in RCA: The study determined the direction of change in Nepal's comparative advantage as an increasing or decreasing trend to determine whether the export potential of the products increased or decreased from period 2 to period 3.[156] If the RCA value in period 3 was higher compared to period 2 (signifying that export potential has increased as Nepal exported more of such product), then the product was classified as having an increasing trend. Otherwise, the classification would be an RCA with a decreasing trend.

The pace of change in the world market: To further understand the development of the world markets, the study classified products as under fast expanding (shrinking) world markets or slow expanding (shrinking) world markets.[157] If the growth rate of an individual product's market exceeded the average growth rate for all products,[158] it was classified as fast expanding. Otherwise, the classification would be slowly expanding. The same procedure was applied for the shrinking market category, except that the comparison used the absolute value of the market changes.

> **Map 1**: Map 1 categorized Nepal's export basket using a two-factor classification: the first factor considers the RCA for period 1 (i.e., 2011 - 2013) and the second factor considers the change in world market trend for period 1 (i.e., 2010 - 2011 compared to 2012 - 2013).

[155] World Bank (2010). Trade Indicators. Washington, DC: World Bank Group. Retrieved from https://wits.worldbank.org/wits/wits/witshelp/Content/Utilities/e1.trade_indicators.htm.
[156] Period 1 is from 2011 - 2013 and period 2 is from 2014 and 2017 (excluding 2015 and 2016 to avoid the impact of earthquake).
[157] If the growth (or shrinking) rate of individual product exceeded the average, the product was categorized as fast pace or else slow pace.
[158] To compute overall average growth, the summation of growth of individual products was divided by number of products in the category. For instance, let us assume expanding market had 3 products with the growth rate of 2, 3, 4, so, in this case overall average growth is (2+3+4)/3=3.

Map 2: Map 2 categorized Nepal's export basket using a two-factor classification: the first factor considers the RCA for period 2 (i.e., 2014 - 2017) and the second factor considers the change in world market trend for period 2 (i.e., 2012 - 2013 compared to 2014 - 2017).

Map 3: Map 3 extends MAP 2 by adding two sub-factors under each of the two main factors: increasing and decreasing trend under the first factor – RCA, and fast and slow pace of market change under the second factor – world market.

Limitations

The study included only the merchandise exports of Nepal since data on exports of services is very limited. Two of the country's leading export revenue earners are from the service sectors – Information and Communication Technology (ICT) and Tourism.

The study covered only the 2010 - 2017 period, as it offered the complete set of variables and observations needed for the analysis. Although not expected, any changes in Nepal's export basket after 2017 will not be captured in the analysis. To avoid exaggerating the impact of the earthquake on economic variables, the study excluded the 2015 and 2016 observations for Nepal. Also, the periods compared coincided with the drastic drop in crude oil prices from above $100 per barrel to around $50 per barrel. As a result, the world prices of most commodities also dropped accordingly, which affected the comparison of world trade values between the two periods and the determination as to whether the world market is expanding or shrinking. The study corrected this nominal price impact by using a world deflator to derive the world export value in real terms. However, the approach failed to correct the large changes in nominal prices adequately, and, as a result, many products ended up classified as being under a shrinking world market.

3.1.3 Findings

Nepal's Export Basket Increasingly Lacks Comparative Advantage and With a Larger Share in Shrinking World Markets

The trade performance of Nepal over the years was dismal. The country experienced an erosion of trade gains as the export to GDP ratio declined from the peak share of 26 percent in 1997 to the current share of below 10 percent. The peak share in 1997 coincided with the 1975 to 2004 period when Nepal took full advantage of the preferential market access granted under the Multifiber Agreement (MFA). The bleak trade performance after the MFA can be explained by the changes in the comparative advantage position of many products in Nepal's export basket. As shown in Table 4, Nepal used to have a comparative advantage over 41 percent of its export basket, and the country marketed 35 percent of those products in expanding world markets. In 2017, Nepal had a comparative advantage over only 21 percent of the products in the export basket, and the country marketed only 6 percent of those products in an expanding world market. Ideally, a robust export product strategy would aim to have a large share of the export basket under this category. Nepal's share of 6 percent is very low when compared to other fast-growing economies in Asia, such as Malaysia, which had a comparative advantage over 72 percent of the products in its export basket that was marketed in expanding world markets.

Table 4: Comparative Advantage and the World Market Situation for Nepal's Export Basket

Nepal's Production Position Relative to the World Market	World Market			
	Expanding (in %)		Shrinking (in %)	
	1999	2017	1999	2017
Comparative Advantage (RCA>=1)	35	6	6	15
Comparative Disadvantage (RCA<1)	6	20	53	59
Total	41	26	59	74

Source: The 1999 numbers are from the World Bank. 2003. Nepal - Trade and competitiveness study (English). Washington, DC: World Bank. http://documents.worldbank.org/curated/en/817271468290458750/Nepal-Trade-and-competitiveness-study. 2017 from Author calculations.

Meanwhile, the proportion of products in the export basket in which Nepal did not have comparative advantage increased from 59 percent in 1999 to 79 percent in 2017. Furthermore, the country marketed a larger proportion of those products in shrinking world markets from 53 percent to 59 percent during the same period. Ideally, a robust export product strategy would aim to have a small share of the export basket under this category. Nepal's 59 percent share is very high when compared to fast-growing ASEAN economies, which had only 2 percent of its export basket with no comparative advantage and in shrinking world markets.

The HRV GD study identified bad transport infrastructure as a binding constraint to investment and growth, as it raises the cost of moving products within Nepal and across the border, thereby reducing the social return to investment. In addition, the GD study identified micro risks emanating from poor investment climate and business environment as binding constraints to investment and growth, as they raise the risk that investors will be unable to retain a significant share of return to investment. Both factors combine to lower the private return to investment, which will cause investors to hold back on their investment. In a World Bank case study, transportation cost accounted for 40 percent of the export price, while the risk factors contributed another 38 percent of the export price in the form of higher profits demanded by Nepali enterprises. The MFA quota allocation and tariff calculations allowed Nepal to export in the world market despite its high cost structure. The phase out of the MFA quota exposed the country's high cost structure to competition from low cost producers, which resulted in Nepali enterprises pricing themselves out of the market. Hence, the loss of comparative advantage on many products in its export basket.

Results from Map 1 (2010-2011 and 2012-2013)

Export Opportunity Map 1 highlights the overall export performance of Nepal during the 2010-2013 period. Table 5 shows that out of 975 products in Nepal's 2010 to 2013 export basket, the country had a comparative advantage over 22 percent (212 products) of the products.[159] Of those products, the

[159] Products used to define a RCA value greater than 1 are termed as classic product.

country exported 12 percent (116 products)[160] in expanding world markets.[161] Products under this category include tea (HS0902)[162] and essential oils (HS3301). A nearly similar share of 10 percent of the products [96 products,[163] carpets (HS5704), women's coats (HS6102)] were exported to shrinking world markets. Although Nepal had a comparative advantage in these products, growing exports could face challenges given the declining world demand.

During the same period, Nepal exported a large share of 79 percent of its export basket (763 products out of 975 products), in which the country did not have a comparative disadvantage on those products.[164] Overall, Nepal exported 45 percent (434 products) of the export basket in expanding world markets. Products under this category included roasted malt (HS1107) and wheat starch (HS1108). The almost similar share between expanding and shrinking world markets reflects the high crude oil prices (and most commodity prices) during this period.

Table 5: Export Opportunity Map 1- Global Market Trend for Products in both Expanding and Shrinking Market from 2010 to 2013

Nepal's Production Position Relative to the World Market	World Market Trend 2010 to 2013		
	Expanding	*Shrinking*	Total
RCA >= 1 Comparative Advantage	**116 *(12%)***	96 (10%)	212 (22%)
RCA < 1 Comparative Disadvantage	434 (45%)	**329 *(34%)***	763 (79%)
Total	**550 (57%)**	**425 (44%)**	**975 (100%)**

Source: Data from harvarddataverse.com.
Note: Proportions sum over 100 percent due to rounding.

The least favorable export situation of no comparative advantage and shrinking world markets, the lower right quadrant, accounted for 34 percent (329 products) of Nepal's export basket. Products under this category included prepared cereals (HS1904) and other vegetables and fruits (HS2001). Given the above classification of Nepal's export basket, the country may need to develop an export strategy that will increase the share of products where Nepal has a comparative advantage and whose markets are expanding.

[160] Please see Appendix 15, Table 1 for the HS code.
[161] If the growth rate is positive, then the product is categorized as expanding otherwise as shrinking.
[162] HS code. The Harmonized Commodity Description and Coding System (HS code) of the tariff nomenclature is an international standardized system of names and numbers for the classification of commodities. The HS code system is based on a 6-10 digit nomenclature.
[163] Please see Appendix 15 for the HS4 produce code.
[164] If the products have comparative disadvantage, the opportunity cost of producing such product is higher as compared to the trading partners. Opportunity cost is defined as value of next-best use of resources, given the limited resources. Please see Appendix 14, section 4 on Determining the Potential of the Produce through Revealed Comparative Advantage.

Results from Map 2 (2012-2013 and 2014-2017)

Nepal encountered a challenging soft, world trade environment in the second period covered in this study, as world crude oil prices dropped from a record high of $130 per barrel in 2011 to $50 per barrel in 2016, and it never exceeded $70 per barrel since then. A 2020 study attributed the drop in world crude oil price to a supply glut in the world oil market, by almost 70 percent.[165] This significant drop in the world crude oil price also pulled down the prices of most commodities that are traded in the world market, as their cost of production declined with the lower oil price.[166] Export Opportunity Map 2 highlights the overall export performance of Nepal during this period. Table 6 shows that Nepal lost its comparative advantage over 10 products in the export basket. Out of 975 products in Nepal's 2014-2017 export basket, the country had a comparative advantage over 21 percent (202 products) of the products, a net loss of comparative advantage over 10 products compared to period 1. Although these products represented only 1 percent of the export basket, Nepal lost its comparative advantage over 57 products [e.g., food preparations (HS2106) and plastics (HS3920)], but since it gained comparative advantage over 47 products [e.g., vegetable materials (HS2308) and yarn of jute (HS5307)], the net loss is only over 10 products. Of the products with comparative advantage, Nepal exported only 6 percent (61 products) in expanding world markets. Products under this category include mineral water (H2202) and footwear (H6404). In fact, Nepal exported a larger share (74 percent, 718 products) of its export basket in shrinking world markets, compared to only 44 percent in the earlier period. For example, exports of fruit juice (HS2009) fall under this category, which also was subjected to a higher general service tax that was imposed by India.

Woven fabric (or textiles) is another example where despite having strong domestic productive capacity, the shrinking world market dampened the export potential of these products.[167] This example demonstrates that an unfavorable world market development can make export challenging even for products where Nepal has a strong comparative advantage.

[165] Stocker, M., Baffes, J,. & Vorisek. a. D.. (2020, 01 31). World Bank Blog. Retrieved from http://blogs.worldbank.org/developmenttalk/what-triggered-oil-price-plunge-2014-2016-and-why-it-failed-deliver-economic-impetus-eight-chart

[166] John Baffes, M. A. (2015). The Great Plunge in Oil Prices: Causes, Consequences,and Policy Responses. World Bank.

[167] As per the trade expert, other factors also were responsible for the decrease in the export of the garment products, including quota restrictions, low-quality products, and export of machine-made, sub-standard products branded as handmade products of Nepal.

Table 6: Export Opportunity Map 2, Global Market Trend for Products in both Expanding and Shrinking Markets from 2012 to 2017

Nepal's Production Position Relative to the World Market	World Market Trend 2012 to 2017		
	Expanding	Shrinking	Total
	Count, %	Count, %	Count, %
RCA >= 1	61, (6%)	141, (14%)	202, (21%)
RCA < 1	196, (20%)	577, (59%)	773, (79%)
Total	257, (26%)	718, (74%)	975

Source: Data from harvarddataverse.com.
Note: Proportion sums over100 percent due to rounding.

Nepal's trade position further deteriorated in period 2, where the share of the least favorable situation – lack of comparative advantage and shrinking world markets – increased from 34 percent to 59 percent. Its preferential market access in India may explain Nepal's ability to export products where the country does not have a strong domestic productive capacity due to the existing trade agreement between the two countries. For example, Nepal exports structures of iron and steel (HS 7308) to India. As per the trade agreement, Nepal only needs to demonstrate a value addition of 25 percent to comply with the rules of origin to gain preferential market access. As such, Nepal imports iron billets with a duty of 5 percent (from India) and export structures of iron and steel to India without being charged a duty, while other exporters [from Most Favored Nation MFN) category] face a duty of 10 percent.[168] In some cases, Nepal gained a strong presence in a niche product, such as Nepali jewelry (HS7113), [169] which, according to the trade expert, is popular in the global market because of the special handcrafting skills of Nepali jewelers.

Results from Map 3

EOM 3 extends EOM 2 by adding two sub-factors, including increasing and decreasing trends under the RCA factor and fast and slow change under the world market development factor. This analysis provides additional insights into the challenges and opportunities faced by Nepal's trade sector.

[168] Source: Integrated database notification.
[169] As per the trade expert, handcraft skill of Nepali jeweler is popular.

Table 7: Export Opportunity Map of Global Market Trend for Products in both Expanding and Shrinking Market from 2012 to 2017

Trend	World Market 2012 to 2017						
	Expanding and Fast Pace	Expanding and Slow Pace	Subtotal	Shrinking and Fast Pace	Shrinking and Slow Pace	Subtotal	Total
	Count	Count	Count	Count	Count	Count	Count
RCA >=1 and Increasing trend	**4 (0.41%)**	**21 (2%)**	**25 (2%)**	32 (3%)	47 (5%)	79 (8%)	**104 (10%)**
RCA>=1 and Decreasing trend	**5 (1%)**	**31 (3%)**	**36 (4%)**	16 (2%)	46 (5%)	62 (7%)	**98 (11%)**
Subtotal	**9 (1%)**	**52 (5%)**	**61 (6%)**				202 (21%)
RCA<1 and Increasing trend				**136 (14%)**	**169 (17%)**	**305 (31%)**	392 (40%)
RCA<1 and Decreasing trend				**106 (11%)**	**166 (17%)**	**272 (28%)**	381 (39%)
Subtotal				**242 (25%)**	**335 (34%)**	**577 (59%)**	773 (79%)
Total	37(4%)	220 (22%)	257 (26%)	290 (30%)	428 (44%)	718 (74%)	975 (100%)

Source: Data from harvarddataverse.com.

Of the 21 percent of products in Nepal's export basket that the country holds a comparative advantage (first two rows of table), there is almost an equal share of products with improving comparative advantage (10 percent, first row) and products with deteriorating comparative advantage (11 percent, second row). However, a larger share of those products is marketed in shrinking (although at a slower pace) world markets (light blue cells [expanding] versus white cells [shrinking]). Of the 79 percent of products in Nepal's export basket that the country lacks any comparative advantage (bottom three rows), there also is an equal share of products with improving comparative advantage (40 percent, fourth row) and products with deteriorating comparative advantage (39 percent, fifth row). Also, a larger share of those products is marketed in shrinking (although at a slower pace) world markets.

This analysis indicates that Nepal exports more products where it has a weaker productive capacity,[170] and the country markets a larger share of those products in shrinking world markets. To increase the role of trade in accelerating growth, Nepal needs to re-assess its product and market strategy to fully

[170] Furthermore, the ability to produce also is decreasing as shown by the decreasing trend.

leverage its domestic production capacity, as well as take full advantage of developments in the world market.

Products Selected from Each Category for Further Analysis

Based on the above findings, five products from each of the four categories in the EOM were chosen for further analysis.[171] The following section briefly examines the products based on the export value and recent trend. [172,173]

A) RCA>1 and Expanding World Markets

Table 8 Product List: RCA>1 and Expanding World Market174

4 Digit HS Code	Product Description	2017 Export Value in Millions $	Share to Total Export Value in Percent	Remarks
3926	Articles of plastics and articles of other materials; value addition	$21.15	2.60%	Exports decreased by 43.9% between 2016/17 and 2018/19.
713	Dried vegetables; legumes	$19.95	2.45%	Exports increased by 8% between 2016/17 and 2018/19.
6404	Footwear with outer soles of rubber, plastics, leather or composition leather	$16.56	2.03%	Exports decreased by 9.43% between 2016/17 to 2018/19.
6305	Sacks and bags, of a kind used for the packing of goods	$15.37	1.89%	Exports increased by 66% between 2016/17 and 2018/19.
6204	Suits, ensembles, jackets, dresses, skirts, divided skirts, trousers, bib and brace overalls, breeches and shorts (other than swimwear); women's or girls' (not knitted or crocheted)	$11.6	1.43%	Exports increased by 5% between 2016/17 and 2018/19.

Source: Harvarddataverse.com and Department of Customs, Nepal (2019).

This is the most preferred EOM category where Nepal has a strong domestic productive capacity, and the world markets are expanding. The country has the potential to expand exports of the 61 products under this category, which represents 6 percent of the export basket, by capturing a share of the growth in the world markets. Table 8 lists five products under this category.

[171] For the products analysis, findings of Map 2 have been taken into consideration.
[172] Time series value as given in the final data set for period 2 (2012, 2013, 2014 and 2017) was considered.
[173] To avoid the erratic trend from the earthquake, data was considered from 2016/17.
[174] All the products were selected based on the highest value and as per the opinion of the trade expert from Trade Export and Promotion Center, Nepal. As per the expert opinion, the data reflects products (like 2202) that are sporadic in nature and as per their advice we excluded those products. Furthermore, as per the trade statistics there is no data available on such products.

The trend analysis shows that the export of some products is increasing, with sacks and bags having the highest growth rate of 66 percent between 2016/17 and 2018/19. There is evidence that these products provide significant value addition and are not traded only because of an artificial arbitrage opportunity. For example, Nepal imports raw material plastics from India and other countries, and the Nepali enterprises produce finished goods, such as gloves and bangles, which are exported primarily to India. Another example, Nepal imports raw materials, such as rubber, from India and other countries, and Nepali enterprises produce and export the finished product – footwear to India. The footwear market in India increased by almost 7 percent in 2017. Recent research shows that India's fashion industry is increasing with the growing middle class in the country.[175] However, Nepal's footwear exports decreased during this period, suggesting stronger competition against other suppliers, not only in terms of the export price but also on product quality. In the case of dried vegetables, a greater demand for Nepali legumes in the international market, including Sri Lanka and Bangladesh, drove the increasing trend in exports.[176] Nepal exports garment products to more than 50 countries, which increased by 5 percent over the three-year period. A study attributed this increase in exports to enhanced product quality and the cheaper Nepali rupee against the US dollar.[177]

The Nepal-India bilateral trade agreement grants Nepal preferential market access, including zero tariffs on all products except for tobacco, zinc, vegetable ghee, and acrylic yarn. The agreement also sets a lower value addition of 25 percent compared to the WTO 30 percent, to comply with country of origin requirements. Nepal has introduced additional incentives to increase its exports to India. For example, a) cash incentives of almost 5 percent on total export value for all fabricated skills and metal products; b) manufacturing industries that create jobs get various indirect subsidies, like tax rebates, discounts on purchase of raw materials, a percentage discount on operating expenses (such as electricity); and c) export incentives are provided for the exports transacted in Indian currency.

B) RCA>1 and Shrinking World Markets

In this category, Nepal has a strong domestic productive capacity, but the world markets of those products are shrinking.[178] The country has the potential to expand exports of the 141 products under this category, which represents 14 percent of the export basket, by effectively competing against existing suppliers to grow its share, even in a shrinking world market situation. Table 9 lists five products under this category.

The trend analysis shows that exports of most products (except for fruit juice) increased between 2016/17 and 2018/19. There is evidence that these products provide significant value addition and are not traded only because of an artificial arbitrage opportunity. For products under this category, Nepal imports most of the raw materials and exports finished products to the world. For example, Nepali carpet and textiles manufacturer imports wool raw materials from New Zealand. The country exports the finished product to the US, where Nepal has preferential market access under the Nepal Trade

[175] McKinsey&Company (2019). The State of Fashion 2019. McKinsey&Company.
[176] TEPC. (2020, January 31). Products, Exporters and Importers. Retrieved from https://www.tepc.gov.np/major_products/full_content/others.
[177] Prasain, K. (2019, September 19). Export of Nepali readymade garment hits 13-year high. The Kathmandu Post.
[178] India is the dominant partner in this category of market as well.

Preference Program. Another example, Nepal imports fruit pulp raw materials from Bangladesh and India, and with a value addition of more than 30 percent, the country exports the finished product to India, which accounts for 92 percent of total exports. Recently, the Goods and Service Tax (GST)[179] on fruit juice increased from 6 percent to 12 percent, which reduced Nepal's exports, as fruit juice products became more expensive in the Indian market.

Table 9: Product List: RCA>1 and Shrinking World Market

4 Digit HS Code	Product Description	2017 Export Value in Millions $[180]	Share to Total Export Value in Percent	Remarks
5701	Carpets and other textile floor coverings	$71.08	8.72%	Exports increased by 0.1% between 2016/17 and 2018/19.
5509	Yarn (other than sewing thread)	$46.96	5.76%	Exports increased by 0.97% between 2016/17 and 2018/19.
5407	Woven fabrics of synthetic filament yarn	$40.04	4.91%	Exports increased by 1.6% between 2016/17 and 2018/19.
2009	Fruit juices (including grape must) and vegetable juices	$28.34	3.47%	Exports decreased by 3.6% between 2016/17 and 2018/19.
7210	Iron or non-alloy steel	$27.46	3.37%	Exports increased by 13% between 2016/17 and 2018/19.

Source: Harvarddataverse.com and Department of Custom, Nepal (2019).

C) RCA<1 and expanding markets (Need to improve):

In this category, the world markets are expanding but Nepal does not have domestic productive capacity to produce the products. Nepal may need to focus on the products that are at the border of becoming competitive (i.e., 0.75=<RCA<1), to take advantage of the expanding world markets. Table 10 lists five products under this category.

[179] It is the domestic tax system imposed by the Government of India in various goods and services.
[180] Time series value as given in the final data set for period 2 (2012, 2013, 2014, and 2017) was considered.

Table 10: Product List - RCA<1 and Expanding World Market

4 Digit HS Code	Product	Export Value in $ million	Share to Total Export Value	Remarks
2106	Food preparations not elsewhere specified nor included/India	$3.46	0.42%	Exports increased by 10% between 2016/17 and 2018/19.
9021	Orthopedic appliances, including crutches, surgical belts, and trusses; splints and other fracture appliances; artificial parts of the body; hearing aids and others which are worn, carried, or implanted in the body to compensate for a defect or disability	$1.21	0.14%	Exports decreased by 55% between 2016/17 and 2018/19.
8525	Transmission apparatus for radio broadcasting or television, whether incorporating reception apparatus or sound recording or reproducing apparatus; television cameras, digital cameras, and video camera recorders	$1.13	0.13%	Exports decreased by 5% between 2016/17 and 2018/19.
5603	Non-woven; whether impregnated, coated, covered or laminated	$0.82	0.10%	Exports decreased by 5% between 2016/17 and 2018/19.
8803	Aircraft and parts	$0.79	0.09%	Exports decreased by 91% between 2016/17 and 2018/19.

Source: Harvarddataverse.com and Department of Custom, Nepal (2019).

Given Nepal's lack of a domestic production capacity for products under this category, exports declined despite the expanding world market situation. There is evidence that these products do not provide significant value addition and are traded because of artificial arbitrage or some other unique opportunities. For example, Nepal lacks manufacturing capacity in aircraft parts. According to industry experts, Nepal sells only scrap aircraft parts to other countries. The depletion of the supply of those aircraft parts explains the 91 percent drop in exports between 2016/17 and 2018/19. Nepal produces orthopedic appliances, but at a low volume, and access to export markets is limited. In the case of food preparation products, Nepal imports most of the raw materials from India and sells the traditional finished products, like *dalmot* and *papad,*[181] to India and Bangladesh. The export of such products increased, as the overall market for *India Namkeen*[182] grew by 7 percent.[183]

[181] They are the traditional food item consumed in subcontinent.
[182] It is a segment to identify savory foods, including dalmot and papad.
[183] Research and Market. (2020, 01 31). Retrieved from https://www.researchandmarkets.com/reports/4701579/india-namkeen-market-overview-2018-2023.

Table 11: Product List: RCA<1 and Shrinking World Market

4 Digit HS Code	Product	Export Value in $ Millions	Share to Total Export Value	Remarks
7113	Jewelry articles and parts thereof, of precious metal or metal clad with precious metal	$2.36	0.29%	Exports increased by 46% between 2016/17 and 2018/19.
7308	Structures of iron or steel and parts thereof; plates, rods, angles, shapes, sections, tubes, and the like, prepared for use in structures	$2.01	0.24%	Exports increased by 125% between 2016/17 and 2018/19.
8504	Transmission apparatus for radio broadcasting or television, whether incorporating reception apparatus or sound recording or reproducing apparatus; television cameras, digital cameras, and video camera recorders	$1.18	0.14%	Exports increase by 19% between 2016/17 and 2018/19.
3921	Plastic plates, sheets, film, foil and strip (not elsewhere classified)	$1.06	0.13%	Exports decreased by 91% between 2016/17 and 2018/19.
0901	Coffee, whether roasted or decaffeinated; husks and skins; coffee substitutes containing coffee in any proportion (not quantity production no)	$0.89	0.11%	Exports increased by 5% between 2016/17 and 2018/19.

Source: Harvarddataverse.com and Department of Custom, Nepal (2019).

D) RCA<1 and Shrinking World Markets (Rethink and reallocate the resources, as appropriate)

The least favorable category covers products where Nepal has a weak domestic productive capacity, and the world markets for those products are shrinking. More than half (59 percent) of Nepal's export basket falls under this category, where exports are not expected to grow. Table 11 lists five products under this category.

Nepal increased its exports by double-digit rates in 4 of the 5 products listed in Table 11, despite the country's lack of domestic productive capacity and the shrinking world markets for those products. According to industry experts, brand recognition and product differentiation allow Nepali products to compete in the world market. For example, the world market recognizes the unique craftsmanship in the case of jewelry and metal crafts, allowing Nepali enterprises to increase exports, despite the country's lack of a strong domestic productive capacity as measured by the low RCA.[184] In the case of coffee, Nepal still produces a limited volume, but there may be a growing recognition of its quality in the

[184] TEPC. (2020, 1 31). Products, Exporters and Importers. Retrieved from https://www.tepc.gov.np/major_products/full_content/others.

world market. Similarly, Nepal produces electronic transformers in small quantities that are not enough to increase the export share.

Box Story 4 – Export Based on Arbitrage: Palm Oil from Nepal

Palm oil is an edible vegetable oil extracted from the fruit of the oil palm tree. It is the most used edible vegetable oil in the world today. Although palm oil trees are native to Africa, currently they are grown in just about all the tropical regions of the world with main plantation areas being in South-East Asian countries, such as Malaysia and Indonesia. Apart from being used as edible vegetable oil, it is also used in industrial lubricants, animal feeds, cosmetic products, and in fuel.

Nepal does not have any source of palm oil and it does not produce it either. Despite that, it became a significant export product in the recent years. For instance, in the fiscal year of 2018/19, NPR 10.3 billion worth of palm oil was exported from Nepal. In fact, in the first five months of the fiscal year 2019/20, NPR 11.5 billion worth of palm oil was exported to India. On the other hand, Nepal also imported crude palm oil worth of NPR 9.9 billion in the same review period.

The sudden export of palm oil from Nepal to India was primarily attributed to the tariff regulations and its implications. The South Asian Free Trade Area (SAFTA) agreement allows exports of goods at zero tariffs from countries like Nepal. This allowed the traders in Nepal to import crude palm oil from other countries at low tariffs and export the refined product to India at zero tariff. The Indian government levies 40 percent on the import of palm oil from third countries, while minimal tariffs from Nepal. Hence, Indian traders preferred to import palm oil from Nepal rather than other third world countries due to high tariff differences. The exporters further claim a value addition of up to 30 percent while exporting refined palm oil to India, which has allowed the exportable product eligible for zero tariff.

Recently, India banned the import of palm oil from Malaysia, citing political differences between the two countries. This has a significant impact on Nepal as it imports significant volume of crude palm oil from Malaysia before processing it in a refined form to be exported to India. Therefore, the refined palm oil sourced through crude palm oil from Malaysia would not be allowed for export from Nepal. This could severely impact the Nepali export. As of the first five months of the current fiscal year, 24.2 percent (NPR 11.5 billion) of the total export of NPR 47.6 billion is attributed to the export of palm oil to India. The ban imposed by the Indian government could adversely affect the companies (approximately ten) that are importing crude palm oil and exporting the refined version to India. As Nepal loses market for its refined version of palm oil, jobs could be lost along with reduced investments in the sector.

Exports to Third Countries

The GON encourages Nepali enterprises to export products to countries other than India, such as Germany, Australia, and the US. Manufacturing industries with significant potential to create jobs receive various forms of support, such as tax rebates, discounts of purchase of raw materials, and subsidies on electricity. Additional incentives are provided for export transactions that are denominated in US dollars.

Product Space Analysis

This section of the report applies a new methodology called product space analysis to analyze the connection between trade and economic growth in Nepal. In this new methodology, economic prosperity happens as countries accumulate productive knowledge that is then fully expressed in the form of products and services that positions them to produce increasingly complex products, which are associated with higher levels of productivity and higher wages, leading to faster growth. A study relating income per capita with a country's Product Complexity Index (PCI) found that PCI explains 75 percent of the variation in income per capita. Furthermore, a one standard deviation increase in product complexity accelerates the long-term growth rate by 1.6 percentage points per year.

The PCI ranges from the lowest index associated with cotton, rice, soy, and others at -2.25 and the highest index associated with machinery at 2.54 (Table 12). The table also shows the PCI for selected products (textiles/garments and agriculture) in Nepal's export basket, which represents 22 percent of the total export value in 2017. Most of the products in Nepal's export basket has a very low PCI value, which ranges from -0.24 for Synthetic Woven Fabrics to -2.07 for Tea. Combining the PCIs of all products in Nepal's export basket gives the country an aggregate complexity index (CI) of only -0.01. During the same year, the CI value for Thailand was 1.15, India 0.32, and Vietnam 0.09. In practice, a country gains productive knowledge as entrepreneurs experiment and tinker with technologies from established producers abroad and combine them with capabilities (e.g., in-bound logistics for raw material inputs, workforce skills, out-bound logistics for finished products, trade promotion and facilitation, access to finance, etc.) that are already used in producing and exporting existing products, to discover new related products that can be produced at low enough cost to be competitive in the world market and still make remunerative returns to investment.

Table 12. Product Complexity Index for Nepal's Export Basket

Product Description	HS Code	Export Value (M$)	Share	RCA	Complexity Index
Chemicals					2.52
Machinery					2.54
Electronics					2.25
Textile and fabrics					0.18
Food processing					-0.07
Garments					-0.43
Miscellaneous agriculture					-0.79
Tropical agriculture					-1.95
Nepal Export Basket					
Textile					
Yarn	5509	69.9	4.4%	304	(0.41)
Carpets	5701	63.1	4.0%	1260	(1.59)
Woven fabrics	5310	26.6	1.7%	2690	(1.56)
Woven fabrics synthetic	5407	23.5	1.5%	23	(0.24)
Shawls, scarves	6214	19.2	1.2%	106	(0.78)
Agriculture					
Waters, including mineral waters and aerated waters	2202	59.8	3.8%	77	(0.55)
Fruit juices	2009	33.8	2.1%	52	(0.98)
Nutmeg, mace and cardamoms	0908	31.7	2.0%	891	(1.73)
Dried leguminous vegetables	0713	9.07	0.6%	18	(1.77)
Tea	0902	11.9	0.7%	35	(2.07)
Chemicals					
Other articles of plastics	3926	19.4	1.2%	6	0.79

Source: Atlas of Economic Complexity: Mapping Paths to Prosperity

Experimentation will allow entrepreneurs and enterprises to acquire a mastery over a broad range of activities that will allow countries to increasingly diversify, to move into nearby related products and to jump into more distant and complex products. As this process of experimentation and diversification proceeds, the resulting cumulative mastery of activities will set into motion an economic logic that will accelerate investment and trade and ultimately bring about economic transformation in the country.

The experience of Nepal and Vietnam best illustrates the two pathways of product diversification. The two countries started at almost the same position in the product space, where many of the products produced and exported were in garments and agricultural products (i.e., cereals and vegetable oils). Over more than two decades, Nepal's diversification largely depended on movements to nearby related products that were within the same garments and agriculture community of products. As a result, Nepal failed to build a cumulative mastery of activities that were needed to diversify into more complex and

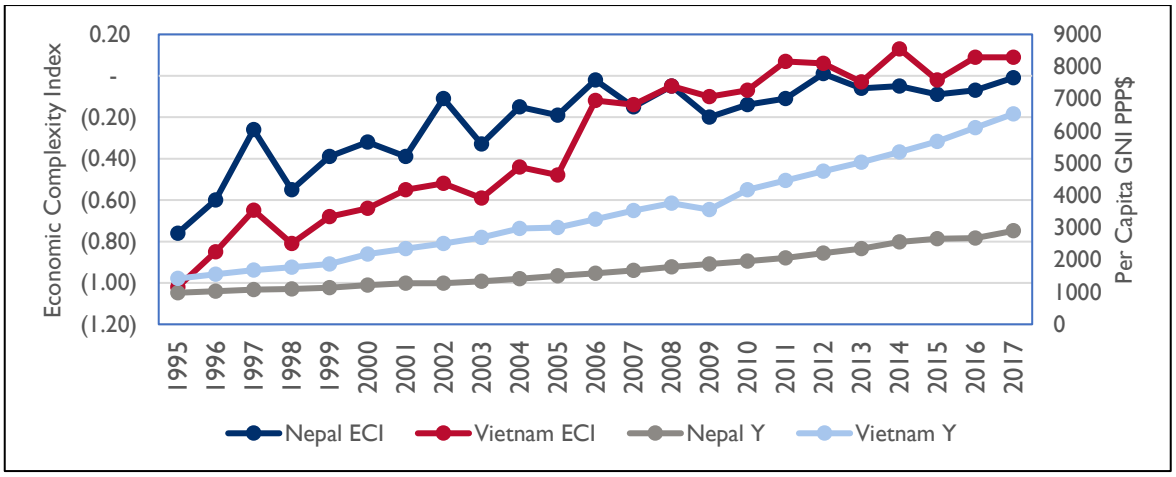
high-value export products, as evidenced by its largely stagnant ECI (Figure 24). The country's long-term growth rate has remained at a low rate of 4.5 percent.

In contrast, Vietnam's CI was lower than Nepal for more than a decade from 1995 to 2007. However, Vietnam diversified its export basket by first moving to nearby products in the garments and agriculture community of products, but later the country jumped into more complex and high-value exports, including machinery and the electronics community of products, which it successfully grew into a larger share of the world export market.

For example, Vietnam ranked as the region's second-largest exporter of electronics after Singapore. Such product diversification allowed Vietnam to sustain an expansion in exports to reach a 100 percent share of GDP, with a growing share of its export basket representing products with higher levels of complexity. The export expansion and diversification created market opportunities that allowed Vietnam to accelerate its investment rate by 10 percentage points to 35 percent, and to sustain this high investment rate over a decade, resulting in a rapid and sustained economic growth above 6 percent. This transformed Vietnam's economy from among the 30 poorest countries in the world in 1995 to becoming a middle-income country in a matter of a decade and a half. Nepal is among the poorest counties in the world, and it aspires to become a middle-income country by 2030.

Nepal can borrow lessons from Vietnam on how to accelerate the economic transformation of the country. Vietnam's economic miracle was powered by good policies that promoted global integration, domestic liberalization, and investment in human and physical capital. On global integration, Vietnam is a signatory to 16 bilateral and multilateral trade agreements (e.g., WTO, ASEAN, U.S., Japan, South Korea, etc.), thereby allowing local enterprises to access foreign inputs at a reduced average applied tariff rate of 2 percent (from 16 percent in 2001), as well as gain preferential market access in signatory countries under those agreements. On domestic liberalization, Vietnam made steady progress in improving the country's investment climate (improved by 10 ranks to 67 of 141 countries in the World Economic Forum's Global Competitiveness Index) and in lowering the cost and risk of doing business in the country (improved by 29 ranks since 2014 to 70 of 190 countries in the World Bank's Ease of Doing Business). On investment in human and physical capital, Vietnam ranked 8th in OECD's Program for International Student Assessment, even ahead of Germany and the Netherlands.

Figure 24. Complexity Index and Per Capita Income for Nepal and Vietnam



Source: Atlas of Economic Complexity: Mapping Paths to Prosperity

3.1.4 Conclusion and Recommendations

Conclusions

At the macro level, the study showed that Nepal's trade gains in the mid-1990s – that peaked at 26 percent in export to GDP ratio – eroded, and the ratio has since declined to below 10 percent, an all-time low over the last two decades. Nepal's exports concentrated on a narrow and low-value product base that heavily relies on a limited number of trading partners, with India accounting for more than half as an export destination, as well as a source of imports.

The study adopted a two-factor classification that categorizes the country's export basket into four categories (i.e., export opportunity map – EOM) based on Nepal's comparative advantage and developments in the world markets for products that the country exports. Nepal could expand the role of trade to propel economic growth through products under the category where the country demonstrates a strong domestic productive capacity and in which the world markets are expanding. On the other hand, products under the category where Nepal lacks a strong domestic productive capacity, but in which the world markets of those products are shrinking, would be a drag to the economy.

The study revealed that Nepal's poor trade performance at the macro level is a direct result of the deterioration of the country's domestic productive capacity, as well as the recent weakness in the world market for merchandise exports. The study compared an EOM between 1999 and 2017 and found that Nepal experienced a net loss in its comparative advantage over 10 percent of the country's export basket, which is approximately 98 products. Moreover, due to the recent weakness in the world market, Nepal exported a larger proportion of the export basket in shrinking world markets, from 44 percent in 2013 to 74 percent in 2017.

Furthermore, the study showed the strong influence of the trade agreement between Nepal and India in shaping Nepal's trade patterns and outcomes. The analysis of the export market of Nepal based on RCA and world market scenario produced anomalous results that are contrary to economic expectations that are purely driven by artificial arbitrage opportunities granted under the India-Nepal bilateral agreement. For example, Nepal should have reduced exports on products under the EOM category where Nepal has weak productive ability, and the products are marketed in shrinking world markets. However, the export trend of selected products instead increased from the period of 2016/17 to 2018/19. Except for plastics [HS-3921], exports of all other products increased, with the highest increase on the structure of iron at 125 percent. The Government of India (GOI) and GON provide various incentives (e.g., duty free trade) to facilitate the trade in the raw material – billets, and the final product in the form of structure of iron, as long as the 25 percent value addition is complied with under the rule of origin

As another example, Nepal has increasingly exported palm oil to India. In this case, Nepal imports crude palm oil at low tariffs and exploits its tariff-free access in the Indian market as a member of SAFTA, to export refined palm oil, while other foreign suppliers face a 40 percent MFN tariff rate. However, not every product exported to India is done to obtain the arbitrage gain. In many products, raw materials are imported, and value addition of more than 30 percent is done in Nepal before exporting to India, as well as other trading partner countries. Carpets are a good example where Nepal imports raw materials from foreign countries, like New Zealand, and exports carpets primarily to the United States.

Empirical evidence points to a strong relationship between the complexity of the products in a country's export basket and its economic performance. Most of the products in Nepal's export basket has a very low PCI value, which ranges from -0.24 for synthetic woven fabrics to -2.07 for tea. Combining the PCIs of all products in Nepal's export basket gives the country an aggregate CI of only -0.01, which remained stagnant in the last decade. During the same period, the CI values increased for Thailand to 1.15, India 0.32, and Vietnam 0.09. Such increase in the share of more complex products in the export baskets of those countries explain their good economic performance.

Nepal can borrow lessons from Vietnam on how to accelerate the economic transformation of the country through an increasing share of products with greater complexity in the export basket. Vietnam's economic miracle was powered by good policies that promoted global integration, domestic liberalization, and investment in human and physical capital, which lowered the cost of experimentation and opened export market opportunities for products that entrepreneurs discovered a way to produce at a low cost to compete in the world market

Recommendations

The export situation of Nepal needs to be improved if the country is to achieve the desired double-digit economic growth and graduate to a middle-income country by 2030. Echoing the economic aspiration of Nepal, below are recommendations based on the general economic literature and situation of Nepal beyond that discussed in this sub-section for strengthening the economic sectors and becoming

competitive.[185] Some of these recommendations overlap with those found in section on growth diagnostics (low appropriability, market failure, and high cost of finance), dealing with appropriability,[186] micro and macro risks, and finance.

Strengthening manufacturing industries: Manufacturing industries responsible for producing tradable goods are the bedrock foundation to achieve structural change. The shift of the resource from low productive to the high productive sector can only be achieved by promoting manufacturing industries.[187] Various studies also suggest that as the contribution of manufacturing industries increases, trade competitiveness of the economy enhances.[188]

However, stimulating the manufacturing industry in Nepal is a challenge and requires major improvements, especially in improving the regulatory framework and infrastructure. The evidence from other developing nations, like Rwanda, demonstrates that the landscape of economy and export can change significantly with improvements in the regulatory framework. Research suggests that Rwanda's economy grew by almost 5 percent (in real terms[189]) from 2004-2012 with the institutional reforms supported by the sustained expansion of export and inflow of FDI.[190]

Learning from global experiences, the GON proposed to strengthen the manufacturing base by focusing on certain industries. Findings from a 2016 report (NTIS, 2016) suggested focusing on nine major light manufacturing industries, including cardamom, ginger, tea, herbal plants, fabrics (including yarn), leather, footwear, pashmina, and knotted carpet to support the industrial base and boost the export potential of Nepal.[191,192] Therefore, a proper rollout and implementation of the Nepal Trade Integration Strategy will be important to strengthen the manufacturing sector. While donors do not get involved directly in manufacturing, they can develop internal strategies and projects that support investment in industries that are poised to improve the country's manufacturing base in expanding markets with competitive advantages.

Improve the business enabling environment and the rule of law: Business operates in a particular environment which is a combination of internal and external factors that influences a company's situation, and any undesirable change in the environment can pose a threat to it.[193] Therefore, the business environment must be continuously improved to lower the cost doing business in the country, especially on experimentation to diversify products, as well as to attract new investments. Nepal still ranks low in many indicators of doing business, including starting a business and enforcing contracts. In the case of starting a business, Nepal and India rank the lowest (with a score of 135 and

[185] The authors recognize that there are enterprise-level constraints that inhibit the growth of existing firms and impede the growth of new ones, such that structural adjustment efforts for increasing exports in Nepal through macro-level reform represents a necessary, but insufficient, condition for private sector development. However, enterprise level constraints are beyond the scope of this assessment.
[186] Risks faced by investors in retaining the return to investment.
[187] IMF. (2015). Make in India: Which Exports Can Drive the Next Wave of Growth? International Monetary Fund
[188] Pant, B., & Panta, a. R. (2005). Export Diversification and Competitiveness:Nepal's Experiences. Nepal Rastra bank
[189] Real GDP measures expansion of output.
[190] Moussa Traoré, A. G. (2013). Rwanda: fostering prosperity by promoting entrepreneurship. Doing Business 2013
[191] As per the analysis, out of 9 products--Ginger, Herbal and Footwear are in expanding market.
[192] NTIS. (2016). Nepal Trade Integration Strategy . Government of Nepal; Ministry of Commerce.
[193] Hans, V. B. (2018). Business Environment-Conceptual Framework and Policies.

136, respectively) among the major South Asian nations. In the case of enforcing contracts, Nepal ranks 151 among 190 nations.[194]

Improvement in the laws regarding contract enforcement also is imperative to promote the business climate (as also suggested in the growth diagnostics analysis). In this context, efficient and transparent court systems are necessary to enforce contracts and imply market rules, thereby protecting property and contract rights. It is often observed that with the independent judiciary system (i.e., the ability of the legal system to honor the contract), firms and individuals tend to use formal business transactions in the market.[195]

Likewise, the government processes should be improved to create a favorable business environment. One of the interventions could be the reduction of paperwork and streaming lining of the business registration process by creating electronic platforms. It is often observed that easing the business registration process significantly increases the number of registered businesses. For instance, after Rwanda simplified its business registration process in 2006, the number of new business registrations increased from 700 in 2007 to 18,447 only three years later in 2010.[196] Donors and their implementers could provide technical assistance by providing international best practices, as well as convening and coalescing support from stakeholders who support improvements in economic governance to undertake the required reforms.

Infrastructure: Infrastructure serves as a backbone for the economic development and prosperity of Nepal. However, the lack of basic infrastructure has impeded investment and economic growth over the last decade.[197] In this context, transportation and road access should be improved to reduce the cost of moving products to different markets within the country as well as across the border to main export destinations. Nepal also needs to develop the required infrastructure to fully exploit the country's hydropower potential, such as constructing hydropower plants and transmission lines, to stimulate the growth of more energy intensive industries as well as to export surplus power during the peak of the monsoon season. The MCC and ADB are making significant investments in this sector.

Timely disbursement of capital expenditure could be one of the ways of expediting infrastructure development activities. As per the Nepal Rastra Bank, 34 percent of the capital budget (NPR 106 billion of 314 billion) of the fiscal year 2018 was spent in the last three months.[198] Also, infrastructure, particularly ports, needs to be improved to enable the growth of the manufacturing sector. Low quality of customs/port increases the cost of doing business. Thus, to improve the status of port, one intervention would be to implement a Public-Private Partnership (PPP) approach, whereby the private sector could do the handling of the operation. Even the findings of World Bank (2016)[199] recommend a similar proposition to improve the ports/customs. Donors and their implementers could play a role in

[194] World Bank. (2020). Ease of Doing Business.
[195] MCC. (2014). Nepal Growth Diagonistic. USAID.
[196] Moussa Traoré, A. G. (2013). Rwanda: fostering prosperity by promoting entrepreneurship. Doing Business 2013.
[197] Chalise. (2017, February 6). Infrastructure development key to propel growth. My Republica.
[198] National Rastra Bank, (2019). Current Macroeconomic and Financial Situation (Based on annual data). Kathmandu, Nepal: Nepal Rastra Bank. Retrieved from: https://www.nrb.org.np/ofg/macroeconomic.php?tp=current_macroeconomic&vw=15
[199] World Bank, (2016). Public Private Partnerships in Ports / Port Reform. World Bank Group. Retrieved from: https://ppp.worldbank.org/public-private-partnership/sector/transportation/ports..

promoting public-private partnerships in infrastructure or improving public management that affects the private sector through their convening power and through technical assistance to adopt international best practices that have worked well in other countries.

Taxation: Nepal's tax rates are among the highest in South Asia, with approximately 42 percent of total income of the company.[200, 201] The MCC study reported the adverse impact of high taxes on private investments.[202] In this context, lowering the rate and expanding the tax base could encourage the private sector to invest in the economy. Furthermore, providing tax incentives to research and development (R&D) expenditure could stimulate private sector innovations which could ultimately lead to the growth of exports.

The active role of a special economic zone: A special economic zone (SEZ) is a geographically delimited area within which the government facilitates industrial activities by providing regulatory support and other incentives.[203] Nepal developed and established SEZs to promote the industrial base by providing incentives, like tax rebates and land, to establish new factories and increase the production capacity. However, as explained in the GD, their progress was hampered by the weak implementation of the polices. For instance, "one-stop service," as envisioned in the SEZ Act, is missing on the ground; such a service is still not available inside Bhairahwa SEZ. Also, there is lack of adequate trade facilitation service to help enterprises inside the SEZ to import raw materials and export finished products. Similarly, there is lack of water supply to prospective industries inside Bhairahwa SEZ.[204] Therefore, the robust implementation of polices with a coordinated effort from all the related stakeholders (from the private sector to government) will be crucial for SEZs to succeed in promoting trade.

3.2 ECONOMIC GROWTH: LEVERAGING COMPETITIVE AGRICULTURAL PRODUCTS FOR THE DOMESTIC MARKET

3.2.1 Introduction

As of 2018, 80 percent of Nepalis live in rural areas, relying on agriculture as their main source of livelihood.[205] The agriculture sector is the largest contributor to Nepal's economy, accounting for about 25 percent of GDP in 2018.[206] It also is an important source of food security, and supports social welfare and human development. Further development of the sector is imperative to reduce poverty and ensure sustained economic growth.

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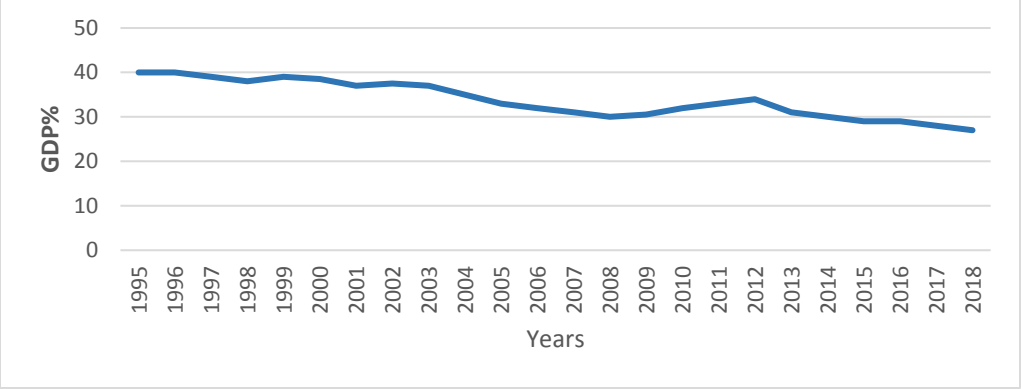
200 Nepal ranks 175 among 190 nations in terms of tax structure. World Bank. Doing Business Report (2019).
201 World Bank. (2019). Doing Business Report. World Bank.
202 MCC. (2014). Nepal Growth Diagonistic. USAID.
203 ADB. (2019). Mactoeconomic Update 2019. ADB.
204 Ibid.
205 ADB. (2019). Dysfunctional Horticulture Value Chains and the Need for Modern Marketing Infrastructure: The Case of Nepal. Sustainable Development and Climate Change Department. Retrieved from: https://www.adb.org/sites/default/files/publication/534711/dysfunctional-horticulture-value-chains-nepal.pdf
206 Gauchan, D. (2018). Agricultural Development in Nepal: Emerging Challenges and Opportunities. Nepal Policy Research Center. Retrieved from: https://www.researchgate.net/publication/328963861_Agricultural_Development_in_Nepal_Emerging_Challenges_and_Opportunities

Figure 25: Contribution of Agriculture toward GDP



Source: World Bank Development Indicators, 2019.

However, the sector's contribution to the country's GDP is declining (Figure 25) due to a relatively slower increase in productivity compared to the other sectors in the economy. Between 2011/12 and 2015/16, the agricultural sector's growth stagnated at 2.41 percent.[207] This sluggishness is linked to rudimentary farming practices that: a) lack mechanization and require favorable weather conditions; b) lack of quality inputs, such as seeds and fertilizers; and c) include land fallowing and abandonment.[208] Additionally, emigration, which continues to increase, especially among males from rural communities has resulted in a shortage of labor,[209] resulting in the feminization of the agriculture sector. The Country Gender Assessment of Agriculture and Rural Development in Nepal shows that 76.4 percent of women farmers work as unpaid family labor, 10.4 percent receive in-kind payment, and 13.2 percent receive cash and in-kind payments.[210]

The GON's Agricultural Development Strategy (2015 to 2035), targets a 4 percent annual growth in agriculture GDP by 2020 and 6 percent annually by 2025. The strategy focuses on four strategic pillars: improving governance, increasing productivity, supporting profitable commercialization, and enhancing competitiveness.

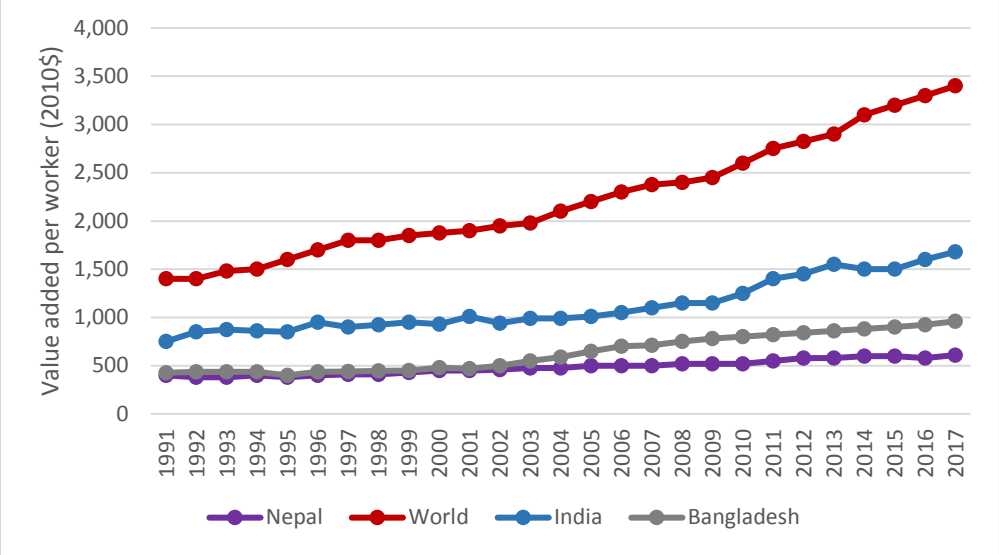
As the productivity of the agriculture sector continues to stagnate, imports substitute shortfalls in supply and contribute to the country's ballooning trade deficit. The agricultural sector's labor productivity is

[207] Government of Nepal. (2016). Agricuture sector profile. Investment Board Nepal. Retrieved from: https://ibn.gov.np/uploads/files/Sector/Agriculture.pdf
[208] World Bank. (2017). Climate-Smart Agriculture in Nepal. World Bank. Retrieved from: https://climateknowledgeportal.worldbank.org/sites/default/files/2019-06/CSA_Profile_Nepal.pdf
[209] Maharjan, A., Bauer, S., and Knerr, A. B. (2012). International Migration, Remittances and Subsitence Farming: Evidence from Nepal. International Migration. Retrieved from https://onlinelibrary.wiley.com/doi/epdf/10.1111/j.1468-2435.2012.00767.x?purchase_referrer=onlinelibrary.wiley.com&tracking_action=preview_click&r3_referer=wol&show_checkout=1
[210] FAO. (2019). Country Program Framework 2018-2022. Food and Agriculture Organization. Retrieved from http://www.fao.org/3/ca5499en/ca5499en.pdf

also low,[211] at $599 per worker, just 17 percent of the regional average in South Asia (See Figure 26). The widening trade deficit, if left uncorrected, will increase the balance of payment deficit and drain foreign exchange reserves to a precarious level that could lead to macroeconomic instability and limit the country's growth prospects.[212]

[211]Value added per worker is a measure of labor productivity—value added per unit of input. Value added denotes the net output of a sector after adding up all outputs and subtracting intermediate inputs.
[212] Spotlight. (2019, July 9). Trade Deficit Widening Gap. SPOTLIGHT. Retrieved from https://www.spotlightnepal.com/2017/07/09/trade-deficit-widening-gap/.

Figure 26: Agriculture, Forestry, and Fishery Value Added Per Worker



Source: World Bank Data, 2019.

In 2018, Nepal imported NPR 224 billion in agricultural goods, which was one of the highest (compared to overall import), representing 16 percent of total imports.[213] For example, the average import in quantity of rice (paddy—rice before threshing or in the husk), maize, tomato, onion and potato - increased by 42 percent, 28 percent, 55 percent, 22 percent, and 112 percent, respectively, from 2011/12 to 2018/19.[214] Increases in agricultural imports were attributed to insufficient domestic production and consumers' changing consumption patterns away from traditional staple food items to more quality products.[215,216]

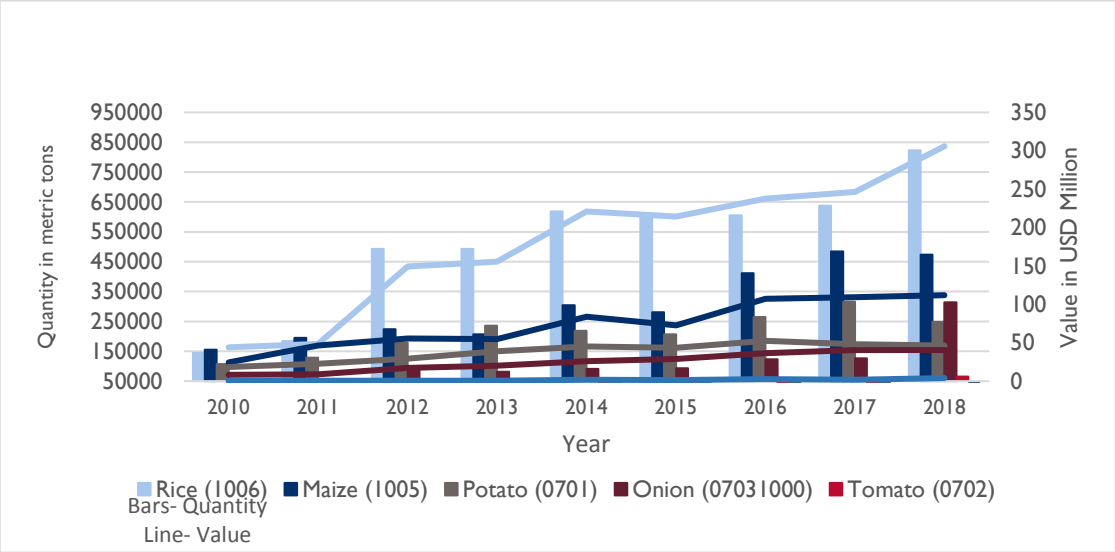
Nepal lacks the economy of scale in food production that its larger neighbor, India, enjoys throughout the year. The prices of Indian agricultural products are also kept low because of heavy government subsidies. GOI allocated 11 percent of its budget in 2018/19 to agricultural sector subsidies.[217] In comparison, Nepal's allocation was 6 percent of its NPR 1.3 trillion budget.[218] There may be other economic and sector-specific factors outside of the scope of this study that also contributes to this discrepancy.

[213] Laxman Kafle. (2019, August 20). Soaring Agro Import An Incongruity Of Economy. The Rising Nepal. retrieved from: https://risingnepaldaily.com/nation/soaring-agro-import-an-incongruity-of-economy
[214] Detailed analysis of trend of import is given in the Appendix.
[215] Simkhada, S. (2019). Review on Nepal's Increasing Agricultural Import. ACTA SCIENTIFIC AGRICULTURE. https://actascientific.com/ASAG/pdf/ASAG-03-0650.pdf
[216] Prasain, S. (2018, August 7). Agro products import bill crosses Rs200b. The Kathmandu Post . https://kathmandupost.com/money/2018/08/07/agro-products-import-bill-crosses-rs200b
[217] Data was provided by the KISAN II team.
[218] Government of Nepal . (2018). Budget Speech for 2018/19. Government of Nepal, Ministry of Finance . retrieved from: https://mof.gov.np/uploads/document/file/speech_english_20180715091522.pdf

Figure 27 illustrates the increasing quantity and value imports of paddy/rice, tomato, potato, maize, and onion from 2010 to 2018.[219] The colored lines represent quantity of production in metric tons, while the bar chart represents value in millions of dollars with different colors representing different produce. The large and growing domestic agricultural markets offer rich opportunities for the private sector to invest and develop a commercial agricultural production system that will raise farm productivity and compete for market share in the domestic import market, and at the same time raise the income of small-holder producers.

This sub-study examines the competitiveness of selected Nepali products by using a price competitiveness index (PCI). The PCI takes the ratio of the wholesale price of a selected Nepali product to the cost of importing [i.e., Cost, Insurance and Freight (CIF) import price] a comparable product from India at the same wholesale market.[220] A PCI above one suggests that the Nepali producers supply such products at a higher price than imports.

Figure 27: Import Value and Quantity of the Products under the Study (Paddy, Tomato, Potato, Maize and Onion)



Source: Compiled from Trade and Export Promotion Centre Database (FY 2010 – 2018).

The sub-study aims to answer the research question, **"**What factors hamper the ability of the agriculture value chain to produce price competitive products in the domestic market, resulting in the significant growth of agriculture imports over the last decades?"

[219] The products were chosen based on the guidelines of USAID.

[220] CIF price is an expense paid by seller to cover the cost, insurance and freight against the possible loss or damage to buyers order while it is in transit to an export port named in the sales contract. As per the trade official agriculture products in Nepal is imported in CIF price.
Adkins, W. What is the Difference between CIF and FOB. Chron (January 29, 2019). Retrieved from https://smallbusiness.chron.com/difference-between-cif-fob-39152.html

3.2.1 Methodology and Limitations

The study covered four agricultural products based on the growth in imports over the last decade, including rice, potato, tomato, and maize. The study calculated the PCIs for the selected products by comparing the wholesale market price for locally produced crops and the adjusted CIF import price for comparable products imported from India, at a common wholesale market for the period 2015/16 to 2018/19.[221,222] For locally produced crops, the study team used secondary data from the Department of Agriculture annual reports. The Ministry of Agriculture reported only 2015/2016 as the most recent cost of production data in Nepal. Hence, the study had to estimate the cost of production and wholesale price in 2016/2017 and 2017/2018 by projecting each component of the cost using the appropriate price indices, such as the Wholesale Price Index (for material inputs), National Salary and Wage Rate Index (for labor cost), and Petroleum Price Index (for fuel and fertilizer cost) that Nepal Rastra Bank reports annually.[223]

The study used the average wholesale price and adjusted CIF import price per kilogram in local Nepali currency from 2015/16 through 2018/19, to remove any price variations that are not related to fundamental supply and demand factors in the market.[224] The study used the CIF prices, reported in the annual foreign trade statistics published by Nepal's Department of Customs, and applied adjustments including fees to unload products, duty at the border, fees for customs clearance, and transportation cost to make them comparable with domestic wholesale price at a common market location.

In addition, the study includes a scenario analysis to assess the potential impact of various interventions on the cost of production, yield, and wholesale price, such as provision of improved seed quality, adequate manure and fertilizer management, and mechanization of farm operations to reduce the labor cost. The study calculated new PCIs to determine the combined impact of those interventions on the competitiveness of the Nepali products.

A. **PCI for paddy:** As suggested by experts from the National Rice Research Program at National Agriculture Research Center (NARC), the study used the average wholesale price[225] for paddy variety (considering only fine rice) in Nepal as the domestic paddy price. The average domestic paddy price was then divided by the average adjusted CIF import price[226] to calculate the PCI for paddy.
B. **PCI for tomato:** The Department of Horticulture at NARC reported that there is no specific variety of tomato imported from India. Hence, the study used the average wholesale price for all

[221] CIF price was taken as the price of imported crop and was adjusted to respective transportation cost to calculate the cost of imported crop in the nearest wholesale market.
[222] Time frame of 4 years starting from 2015/16 to 2018/19 was considered based on the availability of the data from department of agriculture.
[223] Please see Appendix 29 for detailed calculation.
[224] Wholesale price of 2015/16, 16/17, 17/18 and 18/19 was computed and divided by number of years, i.e. 4.
[225] Nepal produces more than 25 varieties of rice (paddy) as per the data from department of agriculture. See Appendix 33 for the detail.
[226] CIF price of 15/16, 16/17, 17/18 and 18/19 was computed and divided by number of years (i.e. 4) to calculate average final CIF price.

varieties of tomato produced locally for the periods studied.[227,228] The average domestic tomato price was then divided by the average adjusted CIF import price to calculate the PCI for tomatoes.[229]

C. **PCI for potato:** The National Potato Development Program of NARC reported potatoes imported from India represent all potato varieties in Nepal. The study used the average wholesale price of all varieties of potatoes produced locally as the domestic potato price.[230,231] This was divided by the average adjusted CIF price to calculate the PCI for potatoes.
D. **PCI for maize:** The National Maize Research Center at NARC reported that imported corn is comparable to corn produced in the Terai region in terms of variety and moisture content. The study used the average wholesale price for all varieties of locally produced maize in the Terai region as the domestic maize price.[232,233] This price was divided by the average adjusted CIF import price to calculate the PCI for maize.[234]
E. **PCI for onion:** Though onion is one of the most commonly consumed vegetables in Nepal, only two percent of the demand for onion is met from local production.[235] Ninety-eight percent of onions consumed in Nepal are imported from India.[236] For this reason, the Ministry of Agriculture and Livestock Department (MOALD) does not collect official data on the production cost and wholesale price of locally produced onions. The study did not calculate the PCI for onions.

Limitations

The study is based on secondary literature and expert opinion from product and subject matter experts to fill any missing information. As a rapid assessment on competitiveness, the study used highly aggregated data at the country level with an annual frequency of observation. As a result, trade potential that is driven by differences between Nepal and India on productivity, as well as on seasonal production patterns due to Nepal's unique biodiversity and topography, may have not been richly captured in the analysis.

[227] Due to the tedious calculation involved in cost of production of tomatoes cultivated in tunnel, the study only considers tomatoes cultivated in open field (not in tunnel). Nepal produce 5 varieties of such tomato. See Appendix 33 for detail.
[228] Wholesale price of 2015/16, 16/17, 17/18 and 18/19 was computed and divided by number of years (i.e. 4) to compute final wholesale price for tomato.
[229] CIF price of 15/16, 16/17, 17/18 and 18/19 was computed and divided by number of years (i.e. 4) to calculate final CIF price.
[230] Nepal produces five varieties of potato. See Appendix 33 for detail.
[231] Wholesale price of 2015/16, 16/17, 17/18 and 18/19 was computed and divided by the number of years (four) to calculate the average wholesale price for tomato.
[232] Nepal produces more than 20 varieties of maize. See Appendix 33.
[233] The wholesale prices from 2015/16, 16/17, 17/18 and 18/19 were added and divided by the number of years (four) to calculate the average wholesale price for tomato.
[234] The CIF prices from 15/16, 16/17, 17/18 and 18/19 were added and divided by the number of years (four) to calculate final CIF price.
[235] Nepali, M. B., Gautam, S., Amatya, S., Gauchan, D., Pokherel, T., Bhat, B., & Sharma, a. B. (2008). *Opportunities and Constraints on Onion Production*
[236] Ibid.

3.2.2 Findings

3.2.2.1 Paddy

Paddy is the most important cereal crop of Nepal and its production accounts for more than 40 percent of agricultural land use.[237] According to MOALD, 1.5 million hectares are dedicated to paddy cultivation, with an average productivity of 3.8 tons per hectare. Though Nepal's paddy harvest hit a record of 5.61 million tons in 2018-19,[238] current rice yields are among the lowest in all South Asian countries. In Nepal, rice is grown in three agro-ecological regions: Terai and Inner Terai (67 to 900 masl),[239] mid-hills (1,000 to 1,500 masl), and high hills (1,500 to 3,050 masl). It is cultivated in irrigated and non-irrigated land and in the lowlands and highlands.[240] Fifty-six percent of paddy fields are irrigated. Thus, a large proportion of rice production still occurs under rain-fed conditions.[241] The Terai region, considered the granary of the country, accounts for about 70 percent of the country's rice output. The hill areas produce 27 percent and the mountain region about 3 percent.

In recent years, Nepal's rice self-sufficiency ratio fell below100 percent, which means that domestic rice production is not enough to meet demand. While Nepal was a marginal exporter of rice before 1980, it is now a rice-importing country due to the combined effects of a slow growth in yield (for both fine and course rice), rapid population growth, and changing consumer preferences from course rice to fine rice. In 2018, Nepal imported 822,629 tons of rice[242] worth $305 million.[243] According to qualitative interviews with traders, the production of fine rice in Nepal did not accelerate, therefore, the majority of the fine rice in the market is imported from India and is mainly the basmati long-grain type.

This sub-section examines the PCI of (fine rice) paddy between locally-grown and Indian-imported rice.[244] The average wholesale price of paddy in Nepal (NPR 30.13/kg) cost less than the average adjusted CIF import price from India (NPR 36.08/kg), giving a PCI value of 0.84.[245] This means that the domestic wholesale price of paddy is approximately 16 percent less than adjusted CIF import price. Further analysis shows that labor accounts for 63 percent of the average cost of production per

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[237] Gauchan, D. (2008). Agriculture Development in Nepal: Contribution to Economic Growth, Food Security and Poverty. Socio Economic Development Panorama. Retrieved from https://www.researchgate.net/publication/284165940_Agricultural_Development_in_Nepal_Contribution_to_Economic_Growth_Food_Security_and_Poverty

[238] MOALD (2018). Statistical information on Nepali Agriculture . Government of Nepal, Ministry of Agriculture.

[239] Meters above mean sea level

[240] Highland and lowland are portions of plain that are conditionally categorized by their elevation above the sea level. Lowlands are usually no higher than 200 m (660 ft.). Uplands are around 200 m (660 ft.) to 500 m (1,600 ft.).

[241] Gadal, N., Shrestha, J., Poudel, M. N., & Pokharel, a. B. (2019). A review on production status and growing environments of rice in Nepal and in the world. Archives of Agriculture and Environmental Science. Retrieved from https://www.researchgate.net/publication/331641330_A_review_on_production_status_and_growing_environments_of_rice_in_Nepal_and_in_the_world

[242] Including paddy (rice in the husk) and all semi-milled or wholly-milled rice.

[243] TEPC. (2020, 01 20). Trade and Export Promotion Center. Retrieved from Export Import Data Bank: Retrieved from http://www.efourcore.com.np/tepcdatabank/

[244] The average wholesale price of all varieties of paddy from (2015/16 to 2018/19) was taken into consideration. Please see Appendix 31, section 1 for the detailed calculation.

[245] Please see Appendix 31, section 1 (paddy) for the detailed calculation.

hectare.[246] Though locally-grown rice is competitive, rice producers could still lower the per unit cost of production by increasing in yield, diversifying the type of seed cultivated, and reducing labor cost through mechanization.

Scenario Analysis for Paddy:

The team modeled the impact that the introduction of improved varieties of seed, fertilizers and irrigation, and tractors and other mechanical equipment such as reapers, threshers, combine harvesters, and haulers would have on the cost, yield, and wholesale price of paddy.[247] The model showed that the combination of these interventions would increase yield by approximately 34 percent (from 3.5 tons per hectare to 4.7 tons per hectare) and reduce the wholesale price of paddy in Nepal to NPR 21.67/kg.[248] The subsequent PCI would decrease from 0.84 to 0.60.[249,250] These findings are consistent with the other research, such as reported by Pingali *et. al,* 1988, which predicted that the use of improved inputs and advanced farm practices including mechanization would improve yield by approximately 50 percent and reduce the labor cost by the same rate.[251,252]

Although Nepal is more competitive than India in producing fine rice, in 2018 the net import of rice stood at 823 thousand tons.[253] This market result indicates the presence of acute coordination failure in the value chain where producers and distributors fail to take advantage of the country's lower cost of production against imports from India. In fact, Nepal's 16 percent cost advantage can be increased further to 40%, with above-mentioned interventions. With the increasing consumer preference for fine rice, farmers responded by gradually moving towards production of fine rice, such that the gap between the demand and production continues to widen.

The growing rice import market opens many opportunities to investment across the value chain, such as in new technology, transport equipment, processing and storage facilities. Such investments, however, will require strong support from the GON in terms of policies - land pooling through contract farming and access to finance for small-holder rice farmers.

3.2.2.2 Maize

Maize is the second most widely produced cereal crop in Nepal and the principal food, feed, fodder, fuel crop, and source of energy in the hills and the Terai. It is widely grown in all three agro eco-zones. Maize is cultivated on 954,158 hectares of land and has a national average yield of 3.6 tons per hectare. Seventy percent is produced in the mid-hill areas, where maize, rather than rice, is the staple food. Just

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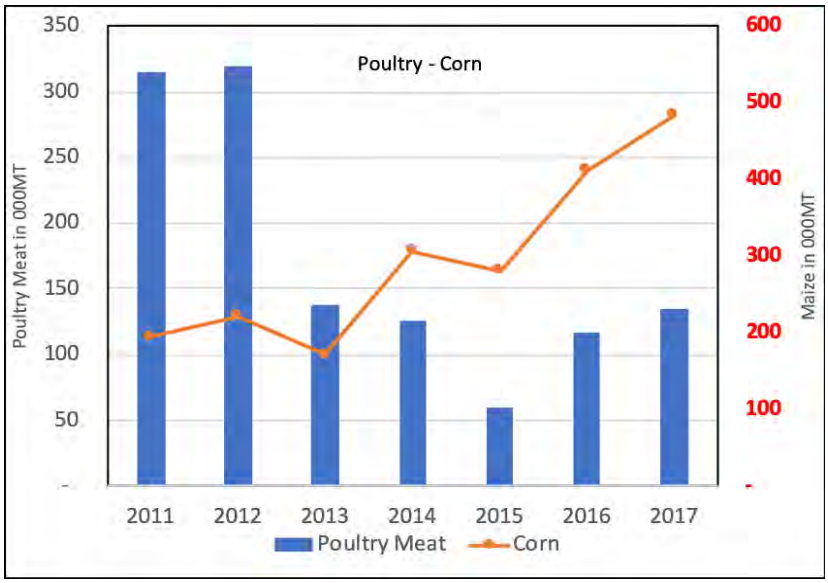
246 Please see Appendix 31, section 1 for the detailed cost structure.
247 Please see Appendix 31, section 1 for the detailed calculation on wholesale price before and after interventions.
248 Total variable cost actually increased by approximately 12% (from NPR 76,502/hectare to NPR 85,251 per hectare) due to the higher use of fertilizers though human labor cost decreased slightly from 63% of total cost to 58% of total cost.
249 Please see Appendix 31, section 1 for the detailed calculation.
250 Please see Appendix 32 for the import trend of rice over the years.
251 Binswanger, H. P. (1978). The Economics of Tractors in South Asia. International Crops Research Institute for Semi-arid Crops. Retrieved from http://oar.icrisat.org/630/1/RA_000005.pdf
252 Pingali, P. L., Binwanger, H. P., Norman, D. W., & Bigot, a. Y. (1988). Agricultural Mechanization and the Evolution of Farming Systems in Sub-Saharan Africa. American Journal of Agriculture Economics. Retrieved from http://documents.worldbank.org/curated/en/487111468202161680/pdf/multi-page.pdf
253 NTIS. (2018). Nepal Trade Integrated Strategy. Government of Nepal. Ministry of Commerce.

eight percent is produced in the high hills; 22 percent of maize is produced in the Terai region (NMRP, 2018). The National Maize Research Program (NMRP) estimates that the majority of farmers in the hills use improved local seeds (open pollinated, costing NPR 80-100 per kg and the farmers in the Terai use hybrid maize seed (costing NPR 400-800 per kg), which comes at a higher cost but produces higher yields.

The demand for maize is increasing in Nepal because of the emerging poultry industry.[254,255] Figure 28 shows the imports of poultry and maize in Nepal over the last six years. Nepal's poultry imports decreased by 200 metric tons to 134 metric tons in 2017, suggesting an import substitution with the rising domestic poultry production. As a result, Nepal imported more maize for feed to support the growing domestic poultry production. Maize imports increased by 400 tmt, as it requires two to three kilos of maize to produce a kilo of poultry meat.

Figure 28. Poultry Meat and Maize Imports



Source: U.N. Trade Statistics. https://comtrade.un.org/data/

The current domestic production is not adequate to meet demand. Identification of suitable areas for production and improved varieties of seed are required to reduce or eliminate reliance on imports. It is estimated 95 percent of maize produced in the mountains and hills is used as food, as it constitutes the staple diet. In the Terai, an estimated 80 percent of maize produced is used for feed.

[254] Dhakal, S. C., Regmi, P. P., Thapa, R. B., & Khatri-Chhetri, S. K. (2015). Productivity and profitability of maize-pumpkin mix cropping in Chitwan, Nepal. Journal of Maize Research and Development. Retrieved from https://www.nepjol.info/index.php/JMRD/article/view/14249

[255] Ghimire, Y. N., Timsina, K., & Gautam, D. D. (2018). Dynamics of Maize Consumption and its Implication in Maize Technology Demand in Nepal. 13th Maize Conference (pp. 184-190). Ludhiana: IIMR; ICAR. Retrieved from file:///D:/Beed%20Files1/Nepal%20MNE%20project/draft%20report/PCI/research%20paper/Ghimire%20et%20al.pdf

In the hills, maize is planted in the spring and harvested before the monsoon. As a result, there is high moisture content (25 to 30 percent) in hill maize compared to crops cultivated in Terai, where it is a winter crop, and the moisture of maize is controlled by adopting basic sun-drying. The moisture content in maize defines its usage in the feed industry, as high moisture increases the weight of the maize and affects the cost per kilogram. In the absence of proper storage, fungi can grow on maize when the moisture content is high. These fungi can be passed on to the animals, making them ill and less efficient in converting feed to muscle meat. Farmers in the hills and the Terai use traditional sun drying practices, which may not adequately reduce the moisture content.

Locally produced poultry is not competitive against imports. The GON applies high import tariffs on poultry (i.e., 9 percent for SAARC versus 30 percent from the MFN), to boost domestic production.[256] This high tax rate on imports, along with other logistical constraints has stimulated growth in the domestic poultry industry and subsequently led to increased demand for feed corn. The higher MFN tariffs for poultry over at 30 percent versus 10 percent has incentivized Nepal's shift to domestic poultry production with support from corn imports.

The study calculated the PCI for maize at 0.67,[257,258] which means that the cost of locally produced maize is approximately 33 percent less than the adjusted CIF import price (NPR 22.31/kg versus NPR 33.12/kg, respectively). Furthermore, the analysis found that labor accounted for 65 percent of the total cultivation cost.[259]

Scenario Analysis for Maize:

The study conducted a scenario analysis to determine the impact of interventions, such as the use of improved seed varieties, fertilizers, and use of pumps and tractors, would have on the cost and productivity of maize production in Nepal. The analysis showed that these interventions would decrease labor cost by 13 percent and the introduction of an improved variety of seeds would increase yield by 11 percent (from approximately 3.6 tons to 4.0 tons). These findings are consistent with other research findings cited previously that suggested that the use of mechanized farm operations together with better quality seed and fertilizer inputs improve yield by approximately 50 percent, and reduces labor cost by the same amount.[260,261] The wholesale price of maize after the interventions would increase marginally from NPR 22.31 to NPR 23.46 (and subsequently PCI from 0.67 to 0.70). Therefore, though locally produced maize would lose some price competitiveness in the scenario, it would continue to have an advantage over Indian maize.

The Terai region of Nepal is more competitive than India in maize production, with the capacity to produce corn at a price that is 33 percent lower than the Indian corn adjusted CIF import price.

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[256] Most Favored Nation (MFN) tariffs are what countries promise to impose on imports from other members of the WTO, unless the country is part of a preferential trade agreement (such as a free trade area or customs union). This means that, in practice, MFN rates are the highest (most restrictive) that WTO members charge one another.
[257] Average wholesale price of all varieties of maize (2015/16 to 2018/19) was taken into consideration.
[258] Please see Appendix 31, section 4 for the detailed calculation.
[259] Please see Appendix 31, section 4 for the detailed cost structure.
[260] Binswanger, H. P. (1978).
[261] Pingali, P. L., Binwanger, H. P., Norman, D. W., & Bigot, a. Y. (1988) = relationship between crop adaptation and climate

However, in 2018, the net import of maize stood at 474 thousand tons.[262] This market result indicates the presence of acute coordination failure in the value chain where producers and distributors fail to take advantage of the country's lower cost of production against imports from India and that Nepal is unable to take full advantage of the large effective demand for corn, valued at $109 million annually. The growing poultry industry in Nepal escalated the demand for maize. Most of the maize produced in the hills has high moisture content and is used for human consumption. Whereas, the maize produced in the Terai region, which has lower moisture content, is primarily used for feed. Maize production in the Terai region is increasing but still cannot meet the growing demand for feed. Moreover, domestic traders mix corn of different varieties and the resulting moisture content does not meet the quality requirements of feed compounders. As a result, the poultry feed industry imports from India to guarantee a stable and sufficient supply of maize throughout the year. In addition, foreign suppliers provide Nepali corn traders with a credit facility to corn and other poultry production inputs (e.g., veterinary products).

Large feed compounders additionally cite that corn is only a winter crop in the Terai region. Hence, a year-round supply of corn at the volume poultry producers need cannot be guaranteed. Feed compounders also receive credit when they import from Indian corn suppliers, which cannot be arranged when procuring from many small-holder corn farmers in Nepal. In addition, the danger of a crop failure adds another layer of risk that feed compounders want to avoid.

The growing maize import market opens many opportunities to investment across the value chain, such as in new technology, transport equipment, processing and storage facilities. Such investments, however, will require strong support from the GON in terms of policies - land pooling through contract farming and access to finance for small-holder farmers and other agents in the maize value chain that provide transport, processing (e.g., drying), and storage services.

3.2.2.3 Tomato

Tomatoes are one of the most commonly consumed vegetable crops in Nepal and demand is continuous throughout the year.[263] Tomato cultivation covers 21,389 hectares of land with a total production of 400,674 tons and average productivity of more than 20 tons per hectare.[264] Tomatoes are a labor intensive crop and wages account for half of the cost of production.[265] Tomatoes are produced in the hill peaks from May to September and from November to March in the Terai. The demand and prices in the market for tomatoes vary seasonally and by location, ranging from NPR 25 to NPR 85 per kilogram.[266]

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[262] NTIS. (2018). Nepal Trade Integrated Strategy . Government of Nepal; Ministry of Commerce.
[263] Gairhe, S., Timsina, K. P., Ghimire, Y. N., Magar, D. T., & Shrestha, S. (2016). Tomato Hybrid Seed Production: Initiation of Public Private Partnership Approach in Agriculture. Nepalese Horticulture. Retrieved from https://www.researchgate.net/publication/315747817_Tomato_hybrid_seed_production_Initiation_of_public_private_partnership_approach_in_Agriculture
[264] Ministry of Agricultural Development. (2016). Statistical Information on Nepalese Agriculture.
[265] Ghimire, N., Kandel, M., Aryal, M., & Bhattarai, a. D. (2017). Assessment of Tomato Consumption and Demand in Nepal. The Journal of Agriculture and Environment. Retrieved from: https://www.nepjol.info/index.php/AEJ/article/view/19893.
[266] Ministry of Agricultural Development. (2018). Statistical Information on Nepalese Agriculture.

The Horticulture Research Division at NARC estimates that half of farmers growing tomatoes in open fields and half use tunnel systems.[267] With the ideal level of inputs and management practices, open field cultivation can produce 100-120 tons of tomatoes per hectare, while tunnel systems can yield up to 500 tons per hectare.

Nepal has the agro-climatic condition to produce tomato throughout the whole year. However, poor product grading, packaging, and transportation practices result in post-harvest losses estimated at 20 to 25 percent, which erode Nepal's competitive advantage.[268]

Nepal is not self-sufficient in tomato production. The major constraints in commercial tomato production are the lack of quality inputs, disease/pest problems, poor transportation, lack of infrastructure, and poor marketing practices.

The PCI of locally produced tomatoes compared to Indian imports is 1.31, suggesting a 31 percent higher price for local tomatoes.[269] Further analysis shows that high labor cost and low productivity raise the cost of tomato production. Labor accounts for 60 percent of total production cost[270] and Nepal's productivity of approximately 23 tons per hectare is low compared to India, where productivity can reach up to 30 tons per hectare. [271,272]

Scenario Analysis for Tomato:

In consultation with experts at the Department of Horticulture at NARC, the team conducted a scenario analysis to estimate the impact of the introduction of improved seed varieties, higher use of fertilizers, and the use of power tillers on the cost, yield, and wholesale price of tomatoes.[273]

The model assumed that yield would increase by approximately 40 percent (from 23 tons per hectare to 32.2 tons per hectare) and the contribution of labor to total cost would decrease from 60 percent cost to 52 percent. The wholesale price would subsequently drop approximately 27 percent from NPR 22.50/kg to NPR 16.73/kg and PCI would decrease from 1.31 to 0.98.[274, 275] Despite the marked reduction in the wholesale price of domestic tomato, the gain in price competitiveness remained marginal, with the PCI still close to one. Though the wholesale price decreased significantly, the high cost of improved seeds[276] partially offsets the gains from the use of power tillers.

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[267] Three Tunnels can be made in a Ropani of land and can be used for two consecutive years after some maintenance. Cost per Quintal seems higher in the first year due to the shed construction.
[268] Bhandari, N. B., Bhattrai, D., & Aryal, M. (2015). Demand and Supply Situation of Tomato in Nepal 2015/16. Agribusiness Promotion and Market Development Directorate. Retrieved from: http://mrsmp.gov.np/files/download/tomato%20book.pdf
[269] Please see Appendix 31, section 2 for the detailed calculation.
[270] Please see Appendix 31, section 2 for the detailed cost structure.
[271] Yield of tomato per hectare.
[272] GOI (2017). Horticulture Statistics. Government of India. Retrieved from: http://nhb.gov.in/statistics/Publication/Horticulture%20At%20a%20Glance%202017%20for%20net%20uplod%20(2).pdf
[273] Please see detailed methodology - tomato for the intervention.
[274]. Total variable cost actually increased by approximately 10% (from NPR 159,209/hectare to NPR 176,018 per hectare) due to the higher use of fertilizers.
[275] Please see Appendix 31, section 2 for the detailed calculation.
[276] The cost of seed/kg increased by almost 12 times from NPR 11,960/kg to NPR 135,000/kg.

Studies have shown that productivity can increase by more than 70 percent with proper interventions in the value chain.[277] For example, proper post-harvest management and adequate transportation facilities could reduce losses by 20 to 25 percent.[278] In addition, good storage facilities would allow farmers to sell their produce when prices are high, rather immediately after harvest, when prices are generally lowest in the year.[279]

3.2.2.4 Potato

Potato cultivation uses 6.47 percent of Nepal's land, or about 199,971 hectares. Production reached 2,805,582 tons, with average productivity of 14.03 tons per hectare in 2015/16.[280] Though farmers are using improved varieties of potatoes, productivity is still much lower than the potential yield.

Potatoes are the second most important staple crop in Nepal, after rice, with a per capita consumption of 51 kg per year. Nepal is one of the top twenty countries where potato contributes significantly to the human diet.[281] Potatoes are grown at altitudes of about 100 to 4,000 meters above sea level in Nepal, mostly by subsistence farmers with small landholdings of only 0.68 ha.[282]

Potato productivity in Nepal increased from 13.58 tons per hectare in 2011/12 to 14.03 tons per hectare in 2015/16,[283] but production remains low to meet demand. As a result, Nepal imports potatoes primarily from India. In 2014-2015, Nepal's potato imports from India reached a value of $45.23 million.[284]

The average wholesale price of potato in Nepal is NPR 25.79/kg, whereas the adjusted CIF import price from India is NPR 25.22/kg. The PCI was 1.02, suggesting a 2 percent higher price of local potato.[285] The analysis found that the cost of seed accounted for 52 percent of total cultivation costs.[286] According to the National Potato Development Program of NARC, introducing higher quality potato seeds is essential to raise productivity and reduce the cost of locally-produced potatoes.

Scenario Analysis for Potato:

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[277] World Bank. (2019). Project for Agriculture Commercialization and Trade. Project for Agriculture Commercialization and Trade.
[278] Ibid.
[279] Bhandari, N. B., Bhattrai, D., and Aryal, M. (2015). Demand and Supply Situation of Tomato in Nepal 2015/16. Agribusiness Promotion and Market Development Directorate.
[280] Ministry of Agricultural Development. (2017). Statistical Information on Nepalese Agriculture. Retreived from https://nepalindata.com/resource/statistical-information-nepalese-agriculture-207374-201617/
[281] Dahal, B. R., & Rijal, S. (2019). Production Economics and Determinants of Potato Production in Nuwakot, Nepal. International Journal of Applied Science and Biotechnology. Retrieved from https://www.nepjol.info/index.php/IJASBT/article/view/23304.
[282] Sapkota, M., & Bajracharya, a. M. (2018). Resource Use Efficiency Analysis for Potato Production in Nepal. Journal of Nepal Agricultural Research Council. Retrieved from: https://media.neliti.com/media/publications/270662-resource-use-efficiency-analysis-for-pot-c3057eb5.pdf
[283] Ministry of Agricultural Development. (2016). Statistical Information on Nepalese Agriculture.
[284] "Export Import Data Bank." Trade and Export Promotion Centre retrieved on http://www.efourcore.com.np/tepcdatabank/commoditywise.php?searchreport=commoditywise.php
[285] Please see Appendix 31, section 3 for the detailed calculation.
[286] Please see Appendix 31, section 3 for the detailed cost structure.

The study conducted a scenario analysis to assess the impact the introduction of tractors, pump sets, sprayers, higher quality potato seeds, manure and fertilizers on the cost, yield, and wholesale price of locally produced potatoes.[287] The analysis found that these interventions would increase yield by approximately 9 percent from 22.3 tons per hectare to 24.5 tons per hectare. However, the cost of improved seed increased cost by almost 20 percent.[288] Thus, the price of potatoes and PCI decreased only marginally, to NPR 24.38/kg and 0.97, respectively.

Analysis shows that improvements in the efficiency of the potato value chain, including warehousing and other infrastructure, such as road networks, would help increase potato production by minimizing post-harvest losses.[289] The UN report specifically cited poor infrastructure as a factor contributing to low potato production in Nepal. Other reports claim that the lack of cold storage is an impediment for potato cultivation, since the potatoes can rot quickly without refrigeration.[290]

3.2.2.5 Onion

Although onions are one of the most consumed agricultural products in Nepal,[291] their production is subsistence based. Onions are cultivated on a total area of 20,070 hectares (which remained constant since 2013) with a production of 2,38,590 tons and a productivity of 11.9 tons per hectare.[292] In fiscal year 2016/17, Nepal imported 123,345.52 tons of fresh/chilled onions from different countries with a total value of NPR 3,983.08 million. The amount of dry onions imported from India, China, Nicaragua and Thailand was 7,067.75 tons (99 percent of which were imported from India), worth NPR 235.81 million.[293]

Though the land area used for the cultivation of onions increased slightly between 2011 and 2016, overall production decreased due to decline in yield. The onion yield in Nepal was higher (11.9 tons per hectare) than in Bangladesh (10.52 tons per hectare) in that period, but was lower than India (17 tons per hectare).[294] A 2008 study found that only 2 percent of Nepal's demand for onion is met from local

[287] Please see detailed methodology-potato for the intervention.
[288] National average seed cost was NPR 133,106 (52% of the total cost), but with the use of improved variety cost seed increased to NPR 160,000 (approximately 56% of the total cost).
[289] FAO. (2010). Strengthening potato value chains. Food and Agriculture Organisation of the United Nations. Retrieved from http://www.fao.org/3/i1710e/i1710e.pdf
[290] Sarkar, D. (2017, March 09). Shortage of cold-storage space hurts West Bengal's potato farmers. The Economic Times. https://economictimes.indiatimes.com/news/economy/agriculture/shortage-of-cold-storage-space-hurts-west-bengals-potato-farmers/articleshow/57555538.cms
[291] Basnet, K. (2017, November 27). Onion productivity on constant decline.my Republica. Retrieved from https://myrepublica.nagariknetwork.com/news/onion-productivity-on-constant-decline/
[292] Ishwori Prasad Gautam, N. G. (2019). Evaluation of Onion Genotypes for Growth and Bulb Yield in Mid Hill of Nepal. Journal of Nepal Agricultural Research Council. Retrieved from: https://www.researchgate.net/publication/250191465_Evaluation_of_Different_Vaireties_of_Onion_and_their_Transplanting_Times_for_Off-season_Production_in_Mid_Hills_of_Nepal
[293] Department of Customs. (2016). Annual Foreign Trade Statistics. Goverment of Nepal. Retrieved from: https://www.customs.gov.np/en/monthlystatstics.html
[294] ADB. (2019). Dysfunctional Horticulture Value Chains and the Need for Modern Marketing Infrastructure: The Case of Nepal. Sustainable Development and Climate Change Department.

production.[295] As a result, there is limited data on the production cost and wholesale price of locally produced onions in Nepal, and it was not feasible to calculate the PCI for onions.

The following are some of the reasons for the low cultivation of onions:

Seasonal pattern*:* Experts argue that onion production in Nepal is limited due to unfavorable climatic conditions. For example, the onion harvesting season coincides with the monsoon season, which results in huge post-harvest losses.

Cost of cultivation: Agro-experts explained that the cultivation cost for onions is high in Nepal compared to India due to modest government support, poor seed quality, and the inability to achieve economies of scale due to fragmented land holding. While there are some government subsidies for fertilizers, seeds, and loans to reduce the cost of production, productivity remains low, as the average household agricultural land area is 0.2 hectares (of 0.7-hectare plots overall including all uses).[296]

Lack of post-harvest technology: The study found that lack of post-harvest technology in Nepal results in large post-harvest losses in the form of sprouting, rotting, and shrinkage.[297, 298]

Scenario Analysis for Onion:

According to the agriculture expert, investment in post-harvest equipment and facilities can alleviate some of the problems in onion production and supply related to Nepal's unfavorable climate, but such would not make the country competitive against imports from India and China.[299,300]

3.2.3 Conclusions and Recommendations

3.2.3.1 Conclusions

This sub-study examined Nepal's competitiveness in fine rice, maize, potato, and tomato, and found that that Nepal's imports of these agricultural products grew significantly over the last decade. The growing import market of these products provided opportunities to incentivize investment, particularly if Nepal can organize a supply chain that can provide these products in the market at competitive prices. The study found that Nepal can be competitive in fine rice and maize, but not in potato and tomato.

Nepal can supply fine rice and maize at competitive prices in the domestic market against imported products from India, as shown by the PCI below 1, at 0.84 and 0.67, respectively. Additionally, targeted interventions to adopt improved seed varieties, advanced soil management practices, and mechanization of some farm operations, may raise yield and reduce the cost of labor such that Nepal's rice PCI may further improve further from 0.84 to 0.60. However, Nepal's competitive fine rice and maize products,

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[295] Nepali, M. B., Gautam, S., Amatya, S., Gauchan, D., Pokherel, T., Bhat, B., & Sharma, a. B. (2008). Opportunities and Constraints on Onion Production.
[296] Nepali, M. B., Gautam, S., Amatya, S., Gauchan, D., Pokherel, T., Bhat, B., & Sharma, a. B. (2008)
[297] Ibid.
[298]Kaini, B. R. (2020, January 5). How we failed on onion. my Republica. Retrieved from: https://myrepublica.nagariknetwork.com/news/how-we-failed-on-onion/
[299] Ibid
[300] Basnet, K. (2017, November 27).

on the one hand, and surging imports, on the other, suggest severe coordination failures across the value chains.

Many of the interventions needed to take advantage of Nepal's low cost, to organize a commercial fine rice and maize supply chain to compete against imports may require simultaneous investments to be made in order for each to become profitable. Unless upstream and downstream investments are coordinated simultaneously, even a low-cost fine rice and maize products may fail to develop commercial supply chains to capture Nepal's growing import market. In addition, the coordination failure includes the absence of enabling policies that would make those necessary investments feasible and profitable. For example, a contract farming law may be needed to facilitate the consolidation of small farms to allow the mechanization of some farm operations and take advantage of economies of scale. In the recommendation section below, the study presents specific actions that will enhance market coordination and develop a profitable commercial supply chain for fine rice and corn.

On the other hand, Nepal cannot supply potato and tomato at competitive prices in the domestic market, as shown by the PCI above 1, at 1.31 and 1.02. The same targeted interventions described above may enable Nepal to markedly lower the wholesale price but the gains in price competitiveness remain marginal, as the PCI only decreases to one, at 0.98 and 0.97. In the case of potato and tomato, which are perishable, Nepal needs to invest in post-harvest equipment and facilities to reduce post-harvest losses and to allow small-holder farmers to market their produce when prices peak, rather than immediately after harvest when prices reach their lowest level in the year.

Various factors contribute to the price competitiveness of Indian produce versus Nepali products. Most importantly, Nepal's agriculture value chain is not as efficient as India's.[301] For example, standardization, grading, and packaging do not receive the attention it needs in Nepal, which contribute to high post-harvest losses and low production. Similarly, weak market linkages in Nepal due to poor road infrastructure create market inefficiencies in relaying price signals that incentivize farm production.

The HRV growth diagnostic analysis in the *"Infrastructure"* section (2.1.3.1.1 C) elaborates the impact of poor transportation and limited road access on the growth of the agriculture and other economic sectors. Transportation problems, including anti-competitive practices,[302] significantly limit the free movement of agricultural products from producers to consumers,[303] and high transportation costs result in higher market prices, which make domestic production uncompetitive in the market. Furthermore, the HRV growth diagnostic analysis suggest that small entrepreneurs, including farmers, encounter problems in accessing credit (e.g., high collateral requirement) and are forced to finance through informal channels that charge high rates for unsecured loans,[304] which in turn increases the cost of production.

[301] Bhandari, N. B., Bhattrai, D., & Aryal, M. (2015).
[302] The study defines anti-competitive practice as transport syndicate within the transport sector.
[303] Samriddhi. (2012). Critical Constraint to Economic Growth of Nepal. Samriddhi Foundation. Retrieved from https://samriddhi.org/publications/critical-constraints-to-economic-growth-of-nepal/
[304] Please see HRV-high cost of finance.

3.2.3.2 Recommendations

Introduce land pooling: The prevalence of agricultural land fragmentation and small land holdings pose challenges to the use of improved agricultural inputs (seeds and fertilizers) and to mechanize farm operations. To realize economies of scale, agricultural land size under a management unit needs to increase. A land pooling model can be developed to incentivize farmers to pool their land and create larger tracts of agricultural land under a management unit, even if dispersed ownership is maintained for legal or equity reasons. Farmers can legally pool their land through cooperatives or contract farming arrangements to become a larger entity. This will improve operational efficiency by enabling farmers to use advanced farming methods, such as improved seeds and farm practices, and mechanization of some farm operations, as well as strengthen farmers' bargaining power in the purchase of inputs and in selling surplus production in the market. In addition, the management unit operating a larger scale can perform some of the marketing services that are currently provided by intermediaries in the agriculture value chain, thereby increasing the share of profit that is retained at the farm level.

The GON has been exploring the concept of Land Bank since 2004 when it was introduced in the National Agricultural Policy. The Agriculture Development Strategy, 2015 had a provision for establishment of the land leasing corporation. The budget for the fiscal year 2019- 2020 announced the establishment of the Land Bank. However, the structure of the Land Bank is still under discussion and also attracted interest from the local governments. The Land Use Act, 2019 should help pave the way for establishment of the Land Bank.

Enabling legislation, such as legislation for land leases, contract farming act, and policies to safeguard landowners, are needed to facilitate land pooling. Development partners can identify existing acts, policies, and legislation that need to be amended, and work with the GON at different levels to develop policies that enable land pooling.

Improve irrigation efficiency: Another major impediment to increasing agricultural productivity in Nepal is the lack of irrigation. It is estimated that out of 2.64 million hectares of total arable agricultural land, only 1.47 million hectares is irrigated.[305] The majority of farmers in Nepal are still dependent on rainfall for irrigation. Climate change is resulting in erratic rains, droughts, and crop failures, leading to low productivity, low returns, and delays in project implementation. Under such conditions, it is important to improve existing irrigation infrastructure to expand the coverage of irrigation water supply. This will improve the reliability of water supply and help farmers better manage the risk of droughts, floods, and fluctuations in the availability of water. To address these issues, development partners and the GON can work together in modernizing the current irrigation system. Toward this end, development partners might work with the GON to develop a long-term plan to improve Nepal's irrigation infrastructure.

Development partners can engage the private sector to facilitate the adoption of technological advances, such as drip irrigation, self-propelled wireless sensors, and GPS technology. At the same time, farmers

[305] Government of Nepal (2018). Economic Survey. Government of Nepal, Ministry of Finance. Retrieved from https://mof.gov.np/uploads/document/file/compiled%20economic%20Survey%20english%207-25_20191111101758.pdf

can be trained to improve irrigation efficiency by adopting climate-friendly farming practices, seasonal planting of crops according to soil conditions, and conservation tillage to help preserve soil moisture.

Increase use of improved agricultural inputs: One of the many reasons cited for low agricultural productivity in Nepal is poor access to quality seeds, fertilizers, and pesticides, at the right time and at reasonable prices. Though there has been an increase in the use of improved seeds, knowledge of how to plant them in a timely manner and adequate use of fertilizers needs to increase as well. Seeds, fertilizers, and other agricultural inputs are often in short supply and farmers rely on black markets to access them, which can be more expensive and do not have any quality guarantees.

These supply chain issues for agricultural inputs should be addressed. The development partners can assist in identifying the supply chain issues and work with the government entities and private sector to address them using market-based approaches. Furthermore, partners can assist the agriculture research institutions (such as NARC) through technical assistance or collaboration with international agricultural research centers. This would help the national program to provide access to improved seed varieties.

Improve access to finance: Increasing farmers' access to financial services and products can increase farmers' productivity, improve post-harvest practices, promote smooth consumption, and enable better access to markets. Through its priority sector lending program, the NRB mandated BFIs to allocate 10 percent of their loan portfolios to agriculture at a subsidized interest rate of 5 percent. However, most farmers and agro-service providers failed to access financial services and instruments because of the BFI's lack of understanding of the sector, poor quality of collateral, inadequate documentation, and the BFI's unwillingness to lend to small borrowers due to high transaction costs. In addition, many loan products have payment terms (e.g., payment schedules and maturity) that do not match with the agricultural crop calendar and, hence, can create cash flow problems for small-holder producers.

Access to finance also plays a vital role in the mechanization of farms and modernization of post-harvest services. Emigration and increased farm labor costs led to the need to adopt labor saving technologies. Development partners can provide technical experts and work with BFIs to develop credit products with loan repayment schedules that are synchronized with agricultural crop calendars to ensure that small-holder producers do not encounter cash flow problems throughout the production season. This will help BFIs improve their understanding of how to work with small farmers and best meet their needs. Development partners can also support the assessment of agriculture finance and, accordingly, consult with government institutions and BFIs to reform policies that enable development of innovative financial products, such as warehousing receipts, credit against purchase orders, micro insurance, and recurring savings. These financial products would contribute to the efficiency of financing and mitigation of risk.

To promote farm mechanization, development partners can engage with the government and private sector at various levels, to support the formulation of policies related to land pooling and work with BFIs to increase access to financing mechanisms to purchase farm machinery.

Develop cold storage/warehousing facilities: High moisture levels during storage can lead to grain discoloration, development of mold and fungus, and increase the likelihood of pest infestation. The lack

of adequate and efficient warehouses limits farmers' flexibility to adopt a marketing strategy that would maximize profit.

The development of warehouses could help stabilize prices, as the farmers would be able to store the produce until sale prices are favorable. Development partners could provide technical assistance to the private sector to assist the establishment of warehouses. Similarly, they could design a model for warehouse receipt financing in partnership with BFIs and the warehouse to support price stability and enable access to credit by collateralizing the warehouse receipts. Moreover, development partners and local government units can work together to help small (and marginalized) farmers by providing access to inputs, information and technology, and improve market access.

Develop market information service: Market performance depends on the quality of information available to various actors involved in the agricultural value chains. In practice, economic agents (traders, producers, and government authorities) often have incomplete and sometimes inaccurate information. This difference in the access to information ultimately leads to inefficient price formation, often to the disadvantage of producers.

Relevant and timely market information empowers small-holder producers to make production and marketing decisions that maximize their incomes. For example, price information over production seasons will inform farmers on the best time to market their products that will command the highest return over the cost of storage. Another example, price information over different market locations will signal surplus and deficit regions and will inform farmers on the best market destination for their products that will command the highest return over the cost of transportation. Such information will also be useful for distributors in making decisions to invest in storage facilities as well as acquire transport facilities to provide those services to small-holder farmers. As a result, price differences between location and between seasons will narrow, and the supply of agricultural commodities will be smoothened spatially and temporally, which will ultimately benefit both producers and consumers.

Develop insurance products: The performance of the agriculture sector depends greatly on the monsoon weather, whether it sets in early or late, whether the precipitation level is low or high, and whether it comes with extreme weather events causing flooding in major agricultural producing regions. The agriculture sector's widely varying growth rates over the last decade reflect the impact of weather, as growth rates ranged from 0.01 percent to 5.14 percent, and the standard deviation reached as high as 60 percent of the mean (i.e., coefficient of variation). As such, risk-averse small-holder farmers who face this type and high level of risk may hold back on any investments to adopt advanced technology and improved farm practices, thereby impeding productivity growth and compromising the sector's competitiveness in the domestic and export markets.

To address the concerns of small-holder farmers on the high level of risk associated with investments to develop their operations, the donor community may partner with the GON and private insurance companies to develop insurance products that protect farm income against extreme weather events and other types of natural disasters. In addition, small-holder farmers can take advantage of an existing GON program that provides a 75 percent subsidy on insurance premium payments for qualified farmers.

Partner with the private sector to better develop supply chains to gain market share: Nepal imports close to half a billion kilos of maize every year to support the growing domestic poultry industry, at a cost of $109 million, which drains the country's foreign reserves. Nepal imports corn from India despite the country's competitive edge in corn over India. Nepal also could supply fine rice at competitive prices.

Development partners could play a role coordinating with the government to encourage the private sector to design mechanisms to address those coordination failures. For example, the following are such mechanisms that entrepreneurs could provide:

- Advanced inputs and extension services to increase productivity of local producers.
- Insurance products to protect farm incomes against extreme weather events.
- Storage facilities and storage service to smooth corn supply and meet the year-round volume required by feed compounders.
- A financing scheme that uses the corn stored in warehouses as collateral to pay farmers upon sale and at the same time provide a similar credit terms that Indian suppliers offer to feed compounders.
- A shift in approach by those supplying corn to feed compounders by procuring some shares of corn from local producers instead of only from imports. This would be done in order to maintain current contacts with Indian suppliers as well as logistics service providers, displacing Indian corn with Nepali corn over time and as appropriate.

With these arrangements in place, entrepreneurs could secure corn supply from imports to meet the requirements of feed compounders in cases of crop failure in Nepal. These services that provide advanced inputs, extension, insurance, and financing to local corn producers entail additional costs. However, if these additional costs can be paid by the current 33 percent corn price differential between Nepal and India, Nepal can gain a growing share of what is currently a $109 million import market, and at the same time, raise the income of local small-holder corn producers.

3.3 ECONOMIC GROWTH: EFFECTIVE AND EFFICIENT MARKET-BASED APPROACHES TO NATURAL RESOURCE MANAGEMENT

In Nepal, natural resources management (NRM), which is the attempt by the government to promote sustainable utilization and management of natural resources, started with the establishment of hunting reserves for royals. Through the years, however, the country underwent major political, economic, social, and environmental changes, which also transformed the NRM approaches and practices. There was a surge in community-based natural resource management (CBNRM), a decentralized and people-centered approach in conserving the natural resource base (water, soil, trees, and local biodiversity). To date, Nepal has about 35 percent of its population involved in community forestry management programs, and a total of 19,361 Community Forestry User Groups (CFUGs) which are legally recognized, self-governed local organizations responsible for the management of forests in Nepal.[306]

Under the new constitution, states are empowered to develop and implement forest policies, laws, and regulations that are appropriate to their respective contexts.[307] Additionally, Nepal is one of the fastest urbanizing countries, with the level of urbanization reaching 18 percent in 2014.[308] Climate change also is having a significant effect, especially due to the greater frequency of extreme climate events (high rainfall, droughts, and floods). All these changes not only led to transformations in the NRM governance, practices, and approaches, but also made NRM a national priority.

Even though NRM gained traction with successful community-based practices and Nepal's commitment to various international treaties and obligations, its full potential has not been realized yet. There also is a significant scope to increase tree cover and forest product manufacturing from private land to contribute to meeting the growing forest product needs of the country. Green and low carbon solutions in Nepal can create plenty of green jobs, help produce surplus products for national and international markets, and help alleviate poverty and inequality among different gender and ethnic groups.[309]

3.2.1 Methodology and Limitations

This section focuses particularly on the following two research questions:

- What factors are constraining the private sector from involvement and investment to address Nepal's development challenges in the following sectors – social, environmental and economic growth, health, education, democracy and governance, and disaster risk management?
- What market approaches to natural resource management (e.g., the market for ecosystem services and tradable land, water, and pollution rights) have the potential to work in Nepal?

[306] Ministry of Forests and Environment (2019) website. Government of Nepal. Retrieved from: http://dof.gov.np/dof_community_forest_division/community_forestry_dof
[307] Forest Investment Program: Investment Plan for Nepal (2017). Ministry of Forests and Soil Conservation, Government of Nepal
[308] UNDESA (United Nations, Department of Economic and Social Affairs). World Urbanization Prospects. The 2014 Revision; UNDESA: New York, NY, USA, 2015.
[309] Karki, M. (2014). Green Economy for Sustainable Development in Nepal: Role of Forestry Sector. The Initiation, 5, 96-109. https://doi.org/10.3126/init.v5i0.10259

- What factors hamper the development of those market approaches to improve natural resource management?

NRM is a vast topic encompassing a wide range of resources and possible approaches. Hence, based on internal discussions, it was agreed for the study to be focused towards four particular sectors of NRM: 1) payment for ecosystem services (PES), 2) timber, 3) non-timber forest products (NTFP), and 4) ecotourism, including the related market approaches and challenges in Nepal for the same. The assessment conducted a literature review and secondary research to provide an in-depth understanding of the sector.

3.2.2 Payment for Ecosystem Services

Ecosystems provide many direct and indirect goods and services that are valuable in sustaining and supporting livelihoods. However, an escalating and exacerbating demand for resources, ecosystem degradation, and environmental changes, along with other stressors, are reducing the efficiency of ecosystem services.[310]

PES is one of the innovative and promising mechanisms that has been employed around the world since the 1980s for ecosystem protection and management.[311] It represents market-based solutions where the beneficiaries or users of an ecosystem service make payments to the providers of that service, thereby ensuring a sustained supply of services. PES recognizes both the cost of securing the provision of ecosystem services, and the need to make ecosystem degradation and loss visible through monetization and, as such, acts as a bridge between beneficiaries and recipients of ecosystem services with tools such as subsidies or market payments. A PES system is usually introduced to create a market for an ecosystem service either when there is a noticeable resource depletion causing its demand, or when there is an aim to protect or manage it. To be successful, every PES scheme must identify a buyer (demand), understand the market conditions (transaction infrastructure), and recognize the service provider (supply), legally or institutionally.

There are a variety of PES schemes based on spatial coverage, product, financing, and payment mechanisms. A summary of the different types of PES systems appears in Appendix 16**.**

3.2.3 Findings and Conclusions

3.2.3.1 Current Situation

In Nepal, the communities are at the forefront of protecting and managing natural resources. For example, the country's Community Forest program is a successful NRM initiative that was hailed across the globe. This exemplary initiative has further elevated hopes of PES schemes becoming successful in sustainably managing resources through the active involvement and participation of communities. There are several PES and PES-type schemes currently operational in Nepal, ranging from legislative provisions

[310] Millennium Ecosystem Assessment (Program). 2005. Ecosystems and Human Well-being. Washington, D.C.: Island Press.
[311] Greiber, Thomas (Ed) (2009). Payments for Ecosystem Services. Legal and Institutional Frameworks. IUCN, Gland, Switzerland.

to community-led initiatives.[312] A schematic summary and brief detail of a few PES projects in the country are provided in Appendix I7.

Despite the theoretical promise and increasing number of PES schemes, many natural resource management approaches do not consider ecosystem services, and there seems to be room for successful employment of PES in Nepal. To delineate this, the following are the key takeaways from existing PES schemes in Nepal:

- Agreements between the upstream and downstream communities on different aspects, including sharing of benefits, need to be reached before implementing the project.
- A concrete institutional framework, backed by laws and regulations, is necessary to have compliance and monitoring, transparency in benefit-sharing, and a clear institutional role of the subsidiary organizations.
- PES is a promising approach for financing watershed management if implemented in close collaboration with local governments in Nepal.[313]
- A clear and high demand for services increases willingness to pay the upstream service providers, thereby ensuring a sustainable supply of services.
- Agreements need to indicate clearly provisions on the conditionality of payments or incentives for cases where the supply of service does not meet the stipulated level.
- The intermediary organizations play a crucial role in building capacity of the local communities, raising awareness about environmental services, and providing policy support in environmental service market sectors.
- New and innovative mechanisms for linking up- and down-stream may provide valuable considerations around how federal institutions can upscale and recognize existing water agreements.
- On-site mentoring and coaching, as well as intensive technical support, is essential for PES to work.
- Nominal physical improvements must be made periodically, and an operation and maintenance fund must be established to reap sustainable benefits.

Although Nepal does not have a specific policy or legislation to support or facilitate the institutionalization of PES fully, recent policy reforms – specifically the national development periodic plan – identify PES as one of the potential market-based instruments for generating conservation finance. Along with this, certain policies and regulations support the implementation of PES:

- The Three-Year Plan (2010/11-2012/13) and the Thirteenth Plan Approach Paper (2012/13-2013/14), both accorded high priority for generating sustainable conservation finance through the selling of ecosystem services, such as tourism, carbon, and water resources.

[312] Bhatta et al. "Payment for Ecosystem Services: Possible Instrument for Managing Ecosystem Services in Nepal." International Journal of Biodiversity Science, Ecosystem Services and Management. 10, no. 4 (2014): 289-299.
[313] Aryal K, Bhatta L, Thapa P, et al. "Payment for Ecosystem Services: Could It Be Sustainable Financing Mechanism for Watershed Services in Nepal?" Green Finance 1, no. 3 (2019): 221–236.

- The Ministry of Forests and Soil Conservation (MFSC) formulated the guidelines to compel hydro-power companies operating inside protected areas to deposit 10 percent of their royalty fees towards environmental conservation and community development.
- Numerous policies and acts, such as National Parks and Wildlife Conservation Act, Buffer Zone Management Regulations, Electricity Act, Forest Act, Local Self Governance Act, and Tourism Policy, among others, include provisions that support PES.

3.2.3.2 Challenges

Unclear policy framework: Although the Environmental Protection Act of 1996 and related regulations indirectly support the principle of "polluters must pay" and "compensatory schemes" for industries, its provisions do not recognize PES legally. Furthermore, conflicting and contradictory public policies have muddled the ground for PES implementation as there is an absence of sound, legal backing. There needs to be a coordinated mechanism that brings together the different line agencies and stakeholders to align these policies. There is a need for concrete policy and legal instruments to further streamline PES mechanisms in development plans and programs.

Lack of coordination among concerned stakeholders: Coordination among departments and ministries is one of the challenges in implementing policies and legal frameworks in Nepal. For this reason, it has been difficult to streamline PES implementation with existing policies. PES is currently being implemented as self-organized, private deals with no designated organizations or institutions responsible for promoting or monitoring it. Hence, even though several PES pilot projects were conducted in Nepal, the sustainability of these projects has been poor. Many schemes have collapsed either because of poor mentoring support or termination of the project.

Lack of clarity of the scheme: Unclear paying mechanisms, a lack of understanding, bargaining business, and the hassle of multilayer payment for business companies have hindered the success of PES. Therefore, there is a need to enhance understanding of the overall mechanism of PES and its policy framework for a larger stake in equity distribution.

3.2.3.3 Recommendations

PES is a flexible, innovative mechanism for sustainable management and protection of ecosystem services. Based on the lessons learned from the existing policy environment and PES projects, the following are recommendations for the national level:

Concrete policy framework: An umbrella legislative instrument with a concrete institutional mechanism and framework is key for the success of PES in Nepal. In this regard, donors and their implementers could play a policy-level role of working with the legislature to remove contradictions and confusions with existing legislation and make timely amendments or formulations of new policies for proper implementation of innovative financing practices.

Coordination among government bodies: Both vertical and horizontal coordination among government departments and agencies is needed to avoid problems at the implementation level. In this

regard, donors could support the government in the systematic and standard analysis of services and their values, as well as help streamline the approach in local plans and programs.

Clarity in PES scheme: Payments should exist not for mandatory requirements but for sustained supply of services. For this, both the beneficiaries and providers must recognize the benefit of an ecosystem service and the opportunity to adopt a PES. Donors can contribute to this by helping outline a system of clear paying mechanisms and management of PES to the supplier and the buyers of the service and ensuring the scheme to provide both with a "win-win" opportunity. Furthermore, donors can work with the local government in the systematic monitoring and analysis of PES on environment management and livelihoods.

Strengthening of PES with additional tools: PES should not be considered a silver bullet, but rather a vehicle tailored to address a specific set of problems. Donors have an opportunity to provide technical assistance to help governments employ PES with tools, such as reducing emissions from deforestation and forest degradation, to add to its effectiveness and success. Additionally, they can help establish different financing mechanisms to provide economic opportunities for communities, improve ecosystem services, and sustainably manage natural resources.

3.2.4 Timber

Nepal has nearly 45 percent of its total area covered by forests.[314] This represents a valuable resource with the potential to provide timber and wood products that are in high demand in households and forest-based industries. The sources of supply of timber are government-managed forest and buffer zones, community forests, leasehold forests, and private forests. Community-based forest management (CBFM) has been a successful approach for forest management in Nepal and, hence, is hailed as a priority program. Over the years, many areas handed over to community groups have recovered from their degraded condition and are now productive and healthy forests. However, the enhanced growing stock of forests has not yet been transformed into the forest industry that creates local jobs, especially in rural areas with extensive and potentially productive forests. Despite well-stocked and potentially productive forests, most timber-based industries in Nepal rely on imports from other countries. There was a failure to deliver the full potential of forest wealth because of a lack of proper silviculture management, a constraining policy environment, and a complex socio-institutional context.

On the one hand, local communities, traders, and the government are sacrificing millions of dollars in foregone income from timber that is potentially available from sustainable forest management. On the other hand, there is little encouragement for entrepreneurs to enter the timber business as the whole sector is drowned in corruption and there is a low guarantee of raw supplies and unnecessary red tape. With low government investment and the lack of an enabling environment for willing actors to invest in, the forest sector remains poorly managed.

[314] Ministry of Forests and Environment. Hamro Ban Annual Report of Department of Forests and Soil Conservation, (2017). USAID/Nepal's Monitoring, Evaluation and Learning Activity

3.2.4.1 Findings and Conclusion

Current Situation

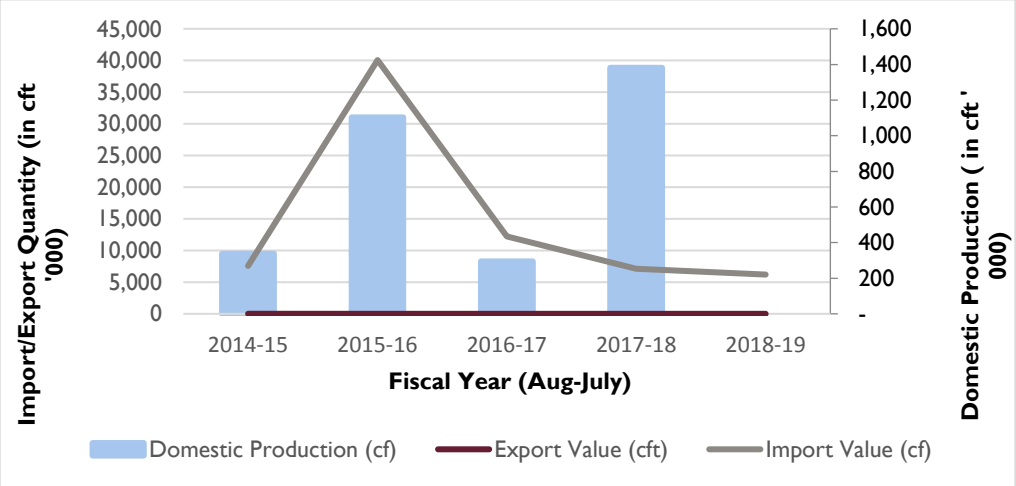
A study by Nepal Forester's Association[315] in 2012 estimated that Nepal's fuelwood demand in 2020 will be 11.7 million tons against a potential supply of 11.5 million tons. Similarly, the timber demand in 2020 is estimated to be 3.75 million tons compared to a potential supply of 4.1 million tons. This favorable national position is complicated by the fact that there is a surplus of wood (both fuelwood and timber) in the hills and mountains, but a shortage in the Terai. Moreover, transport and communications do not easily facilitate the movement of wood to where it is required. The movement of timber to urban areas is considerable and it has been estimated that about 125,000 m^3 of timber is transported annually to Kathmandu from the Terai.

In practice, current domestic timber production is considerably less than its potential, as estimated above. Forest products have the potential to contribute up to 20 percent to the country's GDP from the current 5 percent if the forest resources are utilized properly.[316]

Figure 29, below, shows the domestic production and supply of timber[317] and import of timber for the FY 2014 to 2018.[318] It is evident that the supply of timber from Nepal's forests is irregular (alternating from high in one year and low supply in the following year), which drives import. The formal export of timber has been very low and was banned altogether after the 2015 earthquake. This provides an opportunity to manage the supply of timber through inventory-based forest management and planning along with assessing the trend for the demand for timber. The application of forest inventory to design silviculture operations and its implementation should be prioritized.

[315] Kanel et al. (2012). A study on the demand and supply of wood products in different regions of Nepal.
[316] The Rising Nepal. (November 26, 2019). Retrieved from https://risingnepaldaily.com/main-news/nepali-furniture-firms-heavily-rely-on-imported-timber.
[317] Compiled from the annual reports (FY 2014-2018) of Department of Forests, Ministry of Forests and Soil Conservation, Government of Nepal.
[318] Compiled from the Export/Import Report from Trade and Export Promotion Centre. Ministry of Commerce and Supplies, Government of Nepal.

Figure 29: Timber Import vs. Domestic Production



Source: Annual reports of Department of Forests (FY 2014 – 2018) and Trade and Export Promotion Centre (FY 2014 – 2018).

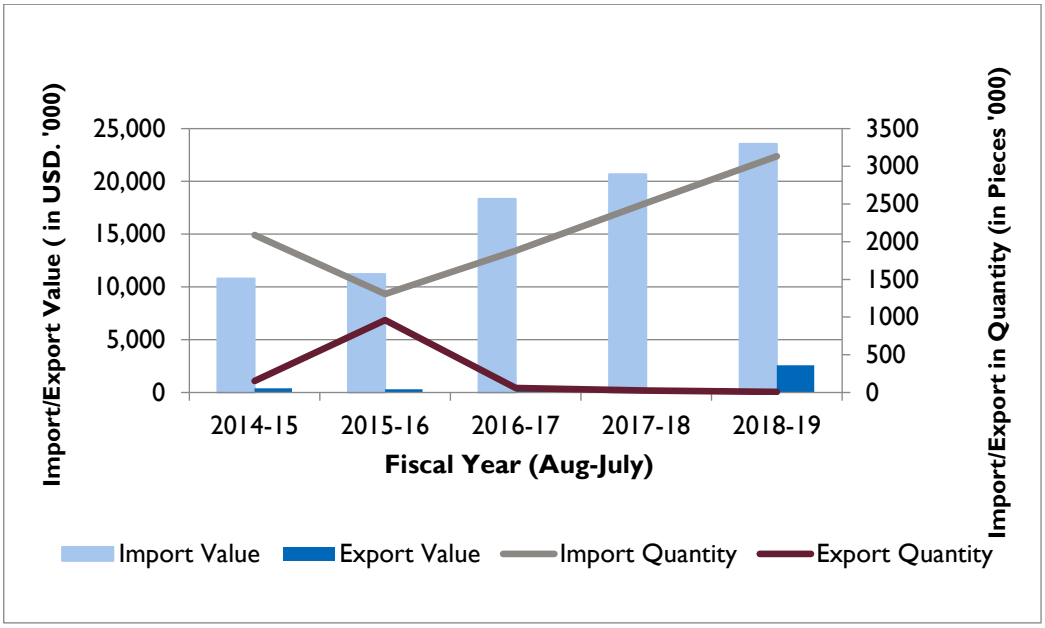
Timber and timber-based imports contribute to Nepal's trade deficit. According to the Federation of Forest-based Industry and Trade, Nepal (FenFIT-Nepal), at least 29.3 million cubic feet of mostly softwood timber was imported from Malaysia, Indonesia, Burma, Vietnam, New Zealand, Denmark, Africa, and Australia in 2015 at the cost of NPR 88 billion. Meanwhile, about 35.3 million cubic feet of timber from Nepal's forests were decaying and wasting due to strict regulations against extracting dead trees.[319] Manufacturers in Kathmandu estimate that about 80 percent of their requirement for processed softwood timber is imported.[320] While the country's annual timber demand is around 40 to 50 million cubic feet, only 7,552,000 (17.55 million) cubic feet of timber was produced in the fiscal year 2017/18.[321] The timber imports also led to Nepali timber products becoming less competitive as there is a lower price of import and no customs charges on timber and timber-related goods.

Figures 30 and 31 provide the import/export value and quantity for furniture (HS Code[322] 9403) and plywood, veneered panels and similar laminated wood (HS Code 4412) for the last five years (2014-2019). During that period, the import of furniture increased by a cumulative average growth rate of 22 percent with an import value of USD 23.6 million between August 2018 and May 2019. Likewise, the import of plywood, veneered panels and similar laminated wood increased by a cumulative average growth rate of 35 percent with the import value of USD 6.9 million between August 2018 and May 2019. Also, during the same period, the import of USD 48.8 million was recorded under the wood

[319] The Himalayan Times. (June 20, 2016). Retrieved from https://thehimalayantimes.com/kathmandu/80-per-centtimber-imported-foreign-countries/
[320] Consultations for the Forest Investment Program-Investment Plan for Nepal. Ministry of Forests and Soil Conservation (June 2017).
[321] The Rising Nepal. (November 26, 2019). Retrieved from https://risingnepaldaily.com/main-news/nepali-furniture-firms-heavily-rely-on-imported-timber.
[322] The Harmonized Commodity Description and Coding System (HS code).

charcoal (HS Code 44). This shows the high import of timber and timber-based products that could be reduced or replaced with the proper supply of timber from Nepali forests. With the increasing cost of timber, people have opted for aluminum and composites that are also imported.[323]

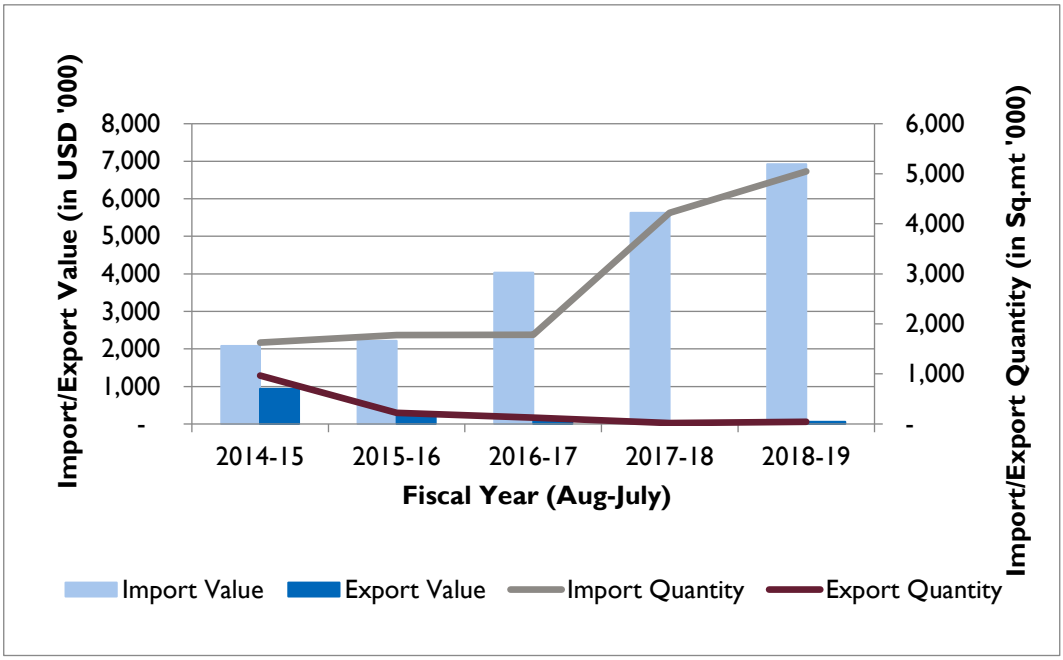
Figure 30: Import/Export Value and Quantity for Furniture



Source: Compiled from Trade and Export Promotion Centre Database (FY 2014 – 2018).

[323] Trade and Export Promotion Centre, Ministry of Commerce and Supplies, Government of Nepal (2014-2018).

Figure 31: Import/Export Value and Quantity for Plywood, Veneered Panels, and Similar Laminated Wood



Source: Compiled from Trade and Export Promotion Centre Database (FY 2014 – 2018).

3.2.4.2 Challenges

Overall, the Program for Wood-based Industries has achieved very little. A huge gap still exists between demand and supply for wood, and market-led economic liberalization policies for timber and other wood products have not been effectively pursued as planned. Consequently, the assured supply of forest products needed to sustain and enhance Nepal's forest-based industry does not yet exist, although increasingly supplies of raw materials are coming from the sustainably managed community and private forests. The main issues include the over-regulation of and frequent changes in policy, interference from agencies (e.g., police, local government, etc.) and the promotion of timber imports. These all affect the allocation of forests, as well as the harvest, sale and transport of forest products.[324]

Past policies and regulations tend to restrict and hinder, rather than stimulate private investment in forestry. For the 5,000 plus wood-based industries registered and operating in Nepal, impractical environmental standards, dual taxation, inconsistency in the auction system, lack of private sector participation in policymaking, and lack of transparency in decision-making processes have created uncertainty and challenges in the growth of these industries. At the same time, a considerable level of

[324] Review of Implementation of the Master Plan for the Forestry Sector: Achievements and Lessons (April 2014). Ministry of Forests and Soil Conservation, Government of Nepal.

unregulated trade and utilization of forest products exists, partly because of the excessive regulation of the wood-using sector.[325]

Furthermore, there were also policy hindrances. Mismatches between forest policies and practices may take place when 1) potentially enabling policies are undermined because of variable interpretations by different individuals at different levels, or 2) policies are contradicted by actions taking place on the ground. Moreover, poorly supported law enforcement, frequent regulation changes, and over-regulation, often without proper consultation or evidence-base of different sectors - such as forest product sales, utilization, and transport and enterprise establishment - exacerbate the matter even more. There are also contradictory dual taxations, where both the central and local governments are charging taxes on forest products, especially on high-value timber. For example, the 2015 Finance Act requires the District Forest Office to charge 15 percent of revenue on sale of high value timber from national forests, especially community forests. Likewise, the local government is imposing taxes on the forest produce, especially on harvesting, through the 1999 Local Self Governance Act.[326] This increased not only the

[325] Forest Sector Strategy- 2016-25 (2016). Ministry of Forests and Soil Conservation, Government of Nepal
[326] Local Self Governance Act, 2055 (1999). Ministry of Law and Justice, Government of Nepal.

Box Story 5: Administrative Hurdles and Bureaucracy Hamper Private Sector Engagement

Trading farm and forestry products, particularly timber products and NTFPs — even from private land — involves a number of often costly bureaucratic hurdles. Getting permission to establish an enterprise in the first place is a lengthy process. Forestry regulations state that forest-based enterprises — such as sawmills, processing plants and furniture industries — have to be at least 0.5 km from national forest boundaries in the mid-hills and one km away in the Terai. So many small and medium forest-based enterprises cannot be legally established in a village, as these tend to be very near national forests. This makes it extremely difficult to find an appropriate setting for a new business. Unreasonable environmental regulations — many of which are based on the 1995 Environment Protection Act and the 1997 Environment Rule — are major obstacles to private sector and community involvement in the forestry business. By law, community forestry groups and entrepreneurs need to carry out environmental impact assessments (EIAs) for commercial cultivation of medicinal and aromatic plants or if they establish sawmills and other forest-related processing plants within one km from the boundary of a national forest. But EIA procedures are too technical and costly for small scale businesses, making compliance difficult, if not impossible. Once a business is established, administrative processes continue to be time-consuming and often require frequent travel to district headquarters. Enterprises need permission from the District Forest Office to harvest, transport and sell timber or NTFPs, even within the district. The actual sale value of many of the forest products does not always cover the cost of getting the permit and paying royalty fees at the multiple checkpoints.

There are also often delays in receiving permits and in particular for transport, as these need to be obtained from various government line agencies. Product quality can deteriorate while sales and collection are delayed. The lack of regulation around the types of business allowed to trade leads to unhealthy competition. There are also unofficial costs, such as incentives and allowances for those who are directly or indirectly involved in the chain.

Source: Excerpt from *Increasing private sector involvement and investment in forestry in Nepal* (April 2016). International Institute of Environment and Development. Available at https://pubs.iied.org/pdfs/17358IIED.pdf

bureaucratic hurdles, but also the market price of different commodities.

However, there has been encouragement for the private sector to be involved in the forestry sector. The second amendment of the Forest Act (1993) in 2016 opened a window for this private sector to be involved by a) forming partnerships with government, cooperatives, and communities to increase forest productivity and management, and b) acquiring the forests on lease. The fifth amendment of the Forest Regulation (1995) further created a new opportunity for forestry user groups (FUG) to establish and manage enterprises through private partnerships. Additionally, the Industrial Enterprise Act (2017) gave greater assurances to the private sector by allowing any part of the national forests to be leased for commercial production of forest products and relaxed the conditions for harvest and transport of trees and non-timber forest products.

3.2.4.3 Recommendations

The following represent conclusions and recommendations at the national level for all stakeholders in terms of market approaches to natural resource management appropriate to Nepal.

Promote private forestry: Over the past decade, out-migration from rural areas has had a considerable impact on subsistence farming practices and social structures in Nepal's rural villages. This led to a shortage of labor and, in many cases, to the abandonment of least productive lands. These abandoned or underutilized lands gradually revert to forest through natural regeneration processes and bring little benefit to landowners. It is important to provide technical and technological services to grow and manage fast-growing tree species as that can generate a substantial softwood resource to meet the current wood demand while generating incomes for landowners, providing environmental services (soil and water conservation) and creating jobs in rural areas. Furthermore, there is a need to simplify regulatory provisions such as registration, harvesting, transportation, sale, and processing to facilitate private forestry.

Nepal already contains all the provisions necessary for supporting a program of plantation establishment on private land. As per Nepal Forest Policy (2015), Policy 1, "Plantation programs will be conducted in private and public lands," and Policy 5, "Technology, soft loans, grants and insurance will be arranged for the promotion of private forest, forest-based enterprise and commercial nurseries." Development partners can act as facilitators in supporting the promotion of privately-owned forested areas for natural resource management. Development partners can facilitate in developing a legal mechanism for investors to enter into a formal agreement with landowners (both private and public). Furthermore, it will be important for development partners to work with the various ministries to ensure that agreements are enforceable for investor confidence.

Promote market linkages: Donors could work across governmental levels to explore a suitable approach to connect private and community forests with forest-based industries and create a strong contract mechanism to ensure a supply of timber from private and community forests in return for an agreed-upon market-based pricing mechanism. This would create a win-win situation, with the private sector/community getting a supply of wood from outside of the national forests, the landowners getting paid, and pressure reducing on the national forests themselves. Moreover, planning timber harvesting and utilization at a landscape level would link several CBFM groups and their forest areas with timber-using industry and stimulate the rural economy in forested areas along with creating jobs.

Improve business climate: The fiscal and legal provisions relating to forest-based industries need to be revised at all levels in Nepal, including the ceilings on landholding for private forestry and the leasing process for government forest land for private lessees. This includes introducing mechanisms to identify the origin of the products (whether from the national forest or private land) and to ease the transportation, verification, taxation and royalty. Also needed are negotiating, as well as supporting the deregulation of timber harvesting, sales, transport and utilization with selected local governments and municipalities in project areas. The development partners can assist in identifying key challenges for operating and managing private forests in Nepal. Accordingly, private forestry practitioners can be consulted to understand the complexities and opportunities of operating private forests. Based on the

challenges identified, solutions can then be implemented to assist policymakers in revising policies for an improved business climate to promote sustainable forest-based industries.

Improve access to finance: To address financial barriers, Ministry of Forest and Environment (MOFE) of needs to work with NRB policies to recognize forestry as a productive sector and bring it under the existing mandatory credit policy provisions of banks and financial institutions to spend at least 2-3 percent of their total loan portfolio in the priority sectors. In addition, it is important to encourage financial institutions to provide credit facilities and loans to private tree-growers and forestry entrepreneurs. The development partners can assist the MOFE in identifying areas suitable for promoting private forests through assessment studies. The study should highlight the net contribution to the GDP of the country, as well as the socio-economic impact that will both help MOFE convince the NRB to recognize the forestry sector as a productive sector. Furthermore, the development partners can collaborate with the Deposit and Credit Guarantee Fund and MOFE to support credit guarantee schemes in order to facilitate priority lending to the forestry sector.

Enable certification: Certification is one of the market-based instruments that support the development of the forestry sector and contributes to improving forest management. It also supports environmentally sensitive production practices in the forest industry and ensures a more socially and environmentally responsible management of forest resources. Hence, the development partners can assist and help build the capacity of MOFE to enable certification of timber-based products. Accordingly, certification should be made mandatory to increase its influence in bringing about political and social change.

3.2.5 Non-Timber Forest Products

For centuries, NTFPs hold significant importance in developing countries, such as Nepal, particularly in rural communities. In Nepal, NTFPs are most commonly harvested from the forests, pasture ecosystems and other wild habitats.[327] Nepal's biodiversity is rich due to varying geography (variance in altitudinal elevation) and climate (variance in rainfall and temperatures), this creating an environment for diverse types of NTFPs to flourish. [328] This means it could also vary in terms of life-forms, reproductive modes, growth strategies and habitat specificities.[329]

Among the variety of NTFPs found, medicinal and aromatic plants (MAP) are the ones in high demand as they are critical in terms of livelihood, health, social and economic perspective.[330] MAPs are commonly found in high altitudes and hills because of the favorable climatic conditions. NTFPs, especially MAPs, have been symbolized as potential high-value commodities due to the surge in their demand over the

[327] Food and Agricultural Organization (2009). Challenges and opportunities for Nepal's small and medium forest enterprises (SMFEs). Asia Network for Sustainable Agriculture and Bioresources. Retrieved from http://www.fao.org/3/i1266e/i1266e00.pdf.
[328] Uprety, Y., Poudel, R. C., Gurung, J., Chettri, N., & Chaudhary, R. P. (2016). Traditional use and management of NTFPs in Kangchenjunga Landscape: Implications for conservation and livelihoods. Journal of Ethnobiology and Ethnomedicine, 12(1), 19.
[329] Ghimire S.K., Sapkota I.B., Oli B.R. and Parajuli-Rai R. (2008). Non-Timber Forest Products of Nepal Himalaya: Database of Some Important Species Found in the Mountain Protected Areas and Surrounding Regions. WWF Nepal, Kathmandu, Nepal
[330] Bhattarai, K., Shrestha, B., & Lekhak, H. (1). Non-timber Forest Products (NTFPs) in the Sagarmatha National Park, Nepal Himalaya. Scientific World, 7(7), 85-91

years in both domestic and international markets.[331] NTFPs have not only gained recognition because they fulfill community and household needs, but also because they are a source of employment and income, contribute to foreign exchange earnings, as well as support the objectives of biodiversity conservation and forest management.

Additionally, NTFPs contribute considerably to the economy and are able to attract substantial global interest. In the past, they were given less priority to timber and were most popular among rural communities as a source of food, medicine, fodder, condiment, and other materials. However, their popularity has grown, surpassing timber over two decades.[332]

3.2.5.1 Findings and Conclusions

Current Situation

In Nepal, it was realized that NTFPs, commonly known as *Jaributi,* have significant potential in improving rural livelihoods and economy by effectively managing the forest resources and attracting the attention of rural communities. The sector has a huge perspective in terms of creating employment for collectors, business opportunities for local and urban traders, manufacturers, and export opportunities. Furthermore, NTFPs are a major source of raw materials for micro-enterprises and play a significant poverty alleviation role among indigenous peoples.

NTFPs are gaining popularity in the national and international markets as they are increasingly being used as vital ingredients in items, such as cosmetics, herbal medicines, and health foods. With the commercialization of NTFPs, new markets have sprung up and this, in turn, has drawn the attention of rural communities in Nepal. The collection, harvesting, transportation, and sale of NTFPs have multiplier effects, both for the rural and urban economies of Nepal.[333] NTFPs that are harvested in Nepal are exported to over 30 countries in Asia, Europe and America.[334] However, approximately 90 percent of the NTFPs that are collected are exported to India in an unprocessed form and then re-supplied to other countries by Indian traders.[335,336,337] As such, unprocessed forest products are exported to India

[331] Agro Enterprise Center/Federation of Nepalese Chambers of Commerce and Industry (2006). A Report on Compilation and Prioritization of Ten Important NTFPs of Nepal for Commercial Promotion through Private Sector Investment.
[332] Arnold, J.E.M., Ruiz Perez, M. (2001). Can Non-Timber Forest Products Match Tropical Forest Conservation and Development Objectives? Ecological Economics, vol 39, pp. 437-447
[333] Preparation of Project Proposal for the Promotion of Non-Timber Forest Products in the Terai Region of Nepal. Ministry of Forests and Soil Conservation, Government of Nepal (July, 2004).
[334] Food and Agricultural Organization (2009). Challenges and opportunities for Nepal's small and medium forest enterprises (SMFEs). Asia Network for Sustainable Agriculture and Bioresources. Retrieved from http://www.fao.org/3/i1266e/i1266e00.pdf.
[335] Maraseni, T.N., Shivakoti, G.P., Cockfield, G., and Apan, A. (2006). Nepalese non-timber forest products: An analysis of the equitability of profit distribution across a supply chain to India. Small-scale Forest Economics, Management and Policy, 5(2): 191 – 206.
[336] Pandit, B.H. (2008). Economics of non-timber forest production promotion and marketing: A case study from Malekhukhola Watershed of Dhading district, Nepal. The Initiation, 2:145 – 156.
[337] Maraseni, T.N., Shivakoti, G.P., Cockfield, G., and Apan, A. (2006). Nepalese non-timber forest products: An analysis of the equitability of profit distribution across a supply chain to India. Small-scale Forest Economics, Management and Policy, 5(2): 191 – 206.

with little revenues for the local communities and the government. It is shown that NTFPs are commonly gathered by people from rural communities and then sold to intermediaries.

Hence, there is a significant potential in expanding the production and trade of NTFPs in Nepal and contributing to the growth of the economy. Furthermore, the promotion of NTFP through increased cultivation and sustainable management can be a strong contributor not only towards increasing the revenue of the government, but also improve conservation efforts of the forest and its ecosystems. However, several issues and challenges lie ahead that need to be overcome to capitalize on this potential.

3.2.5.2 Challenges

NTFPs have received significant attention through different forest policy documents, public meetings, party manifestos, and various other documents, particularly in the last two decades.[338] The government policy of Nepal recognizes enterprises within the NTFP sector as a potential contributor to poverty alleviation achieved by efficient and sustainable forest management. Furthermore, there tends to be a growing positivity regarding the potential of community-based NTFP enterprises in rural areas as development organizations and forestry-based stakeholders have undertaken several initiatives and sustained substantial costs in developing and implementing strategies to promote such enterprises.[339] Additionally, in 2015, out of the total export of NPR 75.5 billion, NTFP's contribution stood at 11.6 percent or NPR 8.74 billion. Although the figure dropped to NPR 7.26 billion (9.7 percent of total exports) in 2016, it increased slightly to reach NPR 7.67 billion (9.9 percent of total exports) in 2017.[340]

However, despite growing efforts towards the development of the sector, it should be noted that the full potential of NTFPs has not been realized. Despite substantial efforts, it is understood that the sector receives very little capital investments from the government and private sector in promotion, enterprise development, and the marketing of quality products.[341] The sector faces administrative and bureaucratic hurdles that unfortunately hinder private sector participation (Box Story: Administrative hurdles and bureaucracy hamper private sector engagement). Even after the identification of NTFPs as an important commodity for poverty reduction, there has not been sustained and systematic support to develop the sector. Further plaguing the sector are issues such as the government's vague investment policy and the lack of proper documentation and record of NTFPs availability.

Despite the policies and legislations that are formulated by the government in the sector for better promotion and management of NTFPs, there are often implementation failures negating the overall efforts. Adding to the issue is the lack of effective enforcement of government regulations, particularly in

[338] Banjade, M.R., and Paudel, N.S. (2008). Economic Potential of Non-timber Forest Products in Nepal: Myth or Reality? Journal of Forest and Livelihood 7(1), pp.36-48.
[339] Kunwar, S.C., and Luintel, H. (2009). Non-timber Forest Products Enterprise Development: Regulatory Challenges Experienced in the Koshi Hills of Nepal. Journal of Forest and Livelihood 8(2), pp. 39-50
[340] Banko Janakari. A Journal of Forestry Information for Nepal. Contribution of NWFPs in National Economy. Vol 28 No. 2, 2018. https://www.nepjol.info/index.php/BANKO/issue/view/1702.
[341] Federation of Nepalese Chambers of Commerce and Industry-Agro Enterprise Center/Nepal Herbs and Herbal Products Association (FNCCI-AEC/NEHHPA) (2012). NTFPs/MAPs Business Promotion Strategy (2012-2016) from Private Sector Perspective. Kathmandu, Nepal.

the high altitude areas, which is resulting in a large number of species being traded without proper management and control.[342] Such failures in effective implementation and enforcement of government regulations are giving rise to numerous challenges within the sector. As forest cover decreases gradually outside of community forests due to the growing population and subsequent urbanization, the resources continue to decline. Increasing demand of the NTFPs on a global scale has further led to over-exploitation of the depleting resources and has created a challenge in the sustainable management of NTFPs.[343]

Below are some of the key issues that are hampering the successful commercialization of NTFPs. These issues, if addressed, could uphold the environmental concerns and result in the sustainable growth of the sector:

Lack of adequate and useful market knowledge: Collectors and traders in rural communities face difficulties when trying to commercialize NTFPs, as most often the markets for the given products are complex. They do not possess adequate market information, including pricing, information on the type, quality, and quantity of NTFPs in demand, the available market for the product, and the market chain. Producers may not have adequate knowledge and information as to where and how they could sell their product in the right market and get the right value.

Inadequate measures for the standardization of NTFPs: NTFPs are still in the nascent stage in terms of standardization. There is no proper certification mechanism in place in terms of setting quality standards. This is leading to two key issues: a) prices are paid to the collectors in terms of the volume of the product ignoring the quality, and b) there are adulterations in products with similar items to increase the volume and increase profits, thereby causing export of sub-standard products. Additionally, due to poor branding and packaging of the products, NTFPs lack commercialization. High-end products that are perishable lack adequate and appropriate packaging that is causing degradation of the products by the time it is exported. The absence of such mechanisms is leading to the products not being able to meet the quality standards of foreign markets in developed economies. It has also been confirmed that comparing and compiling price information would be more difficult due to lack of standardization in product quality, water content, fresh versus dried, and cultivated versus wild-harvested.[344]

Processing and storage-related issues: As some of the NTFPs are not allowed to be exported in crude form, collectors and community traders do not possess the required infrastructure or knowledge to store and process the raw materials to make it an exportable commodity. Additionally, it was determined that the government made the processing mandatory before exporting without conducting

[342] Olsen, C.S., and Helles, F. (1997b). Making the poorest poorer: Policies, laws and trade in medicinal plants in Nepal. Journal of World Forest Resource Management, 8: 137-158.
[343] Regional Centre for Development Cooperation (2008). National workshop on sustainable management of NTFP. Bhubaneswar and Tropical Forest Research Institute (TFRI), Jabalpur, India.
[344] Muir, P., Norman, K., and Sikes, K. (2006). Quantity and value of commercial moss harvest from forests of the Pacific Northwest and Appalachian regions of the US. Bryologist 109(2):197–214.

an actual study about NTFPs.[345] Policies and regulations are, thus, made without actual market assessments and without appropriate infrastructure in place.

Limited species-specific information: Research in the NTFP sector focused on a few products that are important in the international market. Often, rural communities indulge in the harvesting of only certain types of products that are in high demand. The growing demand for certain NTFPs in the international market also resulted in over-harvesting of certain products, thus, hampering the ecosystem. On the other hand, other local communities are oftentimes unaware of the growing demand of the NTFPs available in their vicinity and are unable to capitalize on the possibility of selling available forest products.

3.2.5.3 Recommendations

Development and promotion of a database, such as a marketing information system: A marketing information system would collect, analyze, and communicate information about the existing markets and marketing. Access to such marketing information would help determine the right value and the correct market for their harvest. Doing so will not only enable informed decisions, but also increase revenue by receiving the right value for their product. It should be noted that although a marketing information system is already in practice, it is sporadically available to very limited users. For instance, the available market price information mechanism developed and provided by organizations such as Asia Network for Sustainable Agriculture and Bioresources (ANSAB), Federation of Nepalese Chambers of Commerce and Industry (FNCCI), Business Development Service/ Marketing, Production and Services (BDS MaPs) is significantly enabling the marketing of NTFPs with the right price for the producers and sellers of the products.[346]

This highlights the need to institutionalize the marketing of NTFPs and for the government to actively pursue its usage and availability with the collectors and local traders from the rural communities. In this regard, donors can engage with the government, private sector and development partners to work towards empowering the rural communities with necessary information regarding the NTFPs through the MIS.

Standardizing NTFP sector through proper certification: There is an opportunity for donors to work together with the private sector and government in establishing a proper forest product certification process that provides proof of products from sustainably managed resources. This will further ensure proper branding and promotion of products, as well as improve the profitability and revenue earnings along the entire value chain.

Capitalize indigenous knowledge through active participation: There may be considerable indigenous knowledge of a particular NTFP that has a high potential to be exported to foreign markets. Such NTFPs could be sustainably harvested and sold in foreign markets at a good price using local

[345] Kunwar, S.C., and Luintel, H. (2009). Non-timber Forest Products Enterprise Development: Regulatory Challenges Experienced in the Koshi Hills of Nepal. Journal of Forest and Livelihood 8(2), pp. 39-50.
[346] Agro Enterprise Center/Federation of Nepalese Chambers of Commerce and Industry (2006). A Report on Compilation and Prioritization of Ten Important NTFPs of Nepal for Commercial Promotion through Private Sector Investment.

indigenous knowledge. Donors and their implementers can help develop mechanisms through a collaborative exercise of both the local and outside expert knowledge to develop the sector further.

Box Story 6: Recognition of Forestry as an Industry

Considering the importance of the forestry sector to the national treasury, the governments of developing nations like China, India, Indonesia and Brazil, have provided industry status to it. Recognizing it as an industry has enabled them to focus on the promotion and development of this sector through rules, regulations and policy formulation.

Consequently, such promotional and developmental policy formulations facilitated and increased the participation in and the establishment of many forest-based enterprises. However, in Nepal, the forestry sector comes under the purview of the Ministry of Forest and Soil Conservation (MOFSC) and has not been recognized as an industry by the Ministry of Commerce and Industry. In the absence of such recognition, the forestry sector has fallen prey to bureaucracy and red tape. The MOFSC perceives the forestry sector as an area for conservation, preservation and a source for rural development. Recognition of forestry as a separate industry shall bring about commercializing of the sector, as opposed to the current subsistence level. Further detailed databases should be created, and management practices should be adopted to permit adequate product yields while satisfying growing environmental objectives. Investment in technology will boost quality and competitiveness of the products.

Furthermore, tax sops and incentives accorded to industries, like tax holidays and rebates, will incentivize private sector enterprises to start forest-based industries and take up forestry itself as a venture. Foreign Direct Investment (FDI) flow to the country will increase as cross-border investments are attracted, as in any other industry.

Institutionalize processing and storing of knowledge: Institutional and systemic policy reforms need to be formulated, and initiatives to educate collectors on indigenous and different forms of processing and storing technologies need to be developed. Improvement in processing technologies and infrastructure could lead to improving quality, increasing added value of harvests, and accelerating product supply. For this, demand and requirement-based processing regulations can be developed by the donors through appropriate market research. Furthermore, additional studies can be conducted by the donors to consider the demand for the product and its price in the processed form in the international market before formulating contradicting regulations.

3.3.6 Ecotourism

Globally, travel and tourism are booming industries, outpacing the growth of global GDP in 2018 for the eighth year in a row. The travel and tourism sector are emerging as the second-fastest-growing sector in the world ahead of healthcare (3.1 percent), information technology (1.7 percent) and financial services (1.7 percent). The growth of the travel and tourism industry is largely driven by a growing middle class,

emerging new travel markets, improved connectivity, and increased travel options that fit a wide range of budgets.[347]

The tourism sector emerged as one of the key foreign exchange earners for Nepal. Tourist arrivals to Nepal doubled over the past 10 years (from 509,956 in 2009 to 1.2 million in 2018), making travel and tourism one of the largest foreign exchange-earners.[348] The travel and tourism industry comprises 7.8 percent of GDP, 3.2 percent of direct employment, and constituted 28 percent of total exports.[349]

Having a diverse topography, varied eco-climatic features, rich biodiversity, and unique cultural heritage with mixed ethnic diversity makes Nepal an ideal destination for the promotion and development of ecotourism. There is a growing trend among some travelers who prefer to use the services that are eco-friendly with minimum carbon footprints. In the context of Nepal, ecotourism presents an economic activity that has the potential to generate significant foreign exchange, generate employment and help overcome the problems of underdevelopment, marginality, and fragility.

3.2.6.1 Findings and Conclusions

Current Situation

Earlier conservation efforts in Nepal focused on adopting strict protection measures. Armed forces were being deputed to protect and control demarcated areas defined as protected areas, national parks, and reserves. This led to social and cultural displacements and intense conflicts between the Park Authority and the local people. This prompted the adoption of a management approach from an exclusive to an inclusive approach, which was aimed at a high degree of local community participation. Today, management plans of protected areas acknowledge the importance of ecotourism as an important source of funding for conservation of biodiversity, poverty alleviation and promoting local businesses that use sustainable principles and practices. Most ecotourism projects in Nepal take an Integrated Conservation and Development Project approach (ICDP), which aims to link biodiversity conservation in protected areas with local social and economic development,[350] and which prioritizes a Public Private Community Partnership (PPCP) model for sustainable tourism and conservation.

One of the first experimental ecotourism models established under the PPCP model through an ICDP approach was the Annapurna Conservation Area Project (ACAP) that is spread over 7,629 sq. km[351] and is implemented by the National Trust for Nature Conservation. Under this model, tourism receipts are invested directly into the village economy for sustainable tourism and environmental protection. The ACAP project is regarded as a model eco-tourism project. The successful experience of integrated conservation and development in the ACAP project motivated the government to replicate the model in other protected areas, national parks and reserves, namely in Manaslu Conservation Area Project

[347] Center for Responsible Travel, "The case for responsible travel: Trends & Statistics 2018"
[348] Ministry of Culture, Tourism and Civil Aviation (2019). Nepal Tourism Statistics 2018.
[349] World Travel and Tourism Council (2018). Travel and Tourism: Economic Impact 2018, Nepal.
[350] Wells et al. (1999).
[351] NTNC Annual Report 2018 available at https://ntnc.org.np/project/annapurna-conservation-area-project-acap.

(MCAP), Gaurishankar Conservation Area Project, Bardia Conservation Program, and Shuklaphanta Conservation Program.

Ecotourism flourished in the form of homestays (village tourism) in rural Nepal, which provide additional income to households, thereby aiding in the conservation of natural resources, cultural heritage and improving the standard of living. Since 2015, the number of homestays across the country increased by approximately 50 percent from 217 homestays in 2015 to 324 homestays in 2018.[352] The establishment of homestays in Sirubari, Ghalegaon, Dalla (Bardiya) has manifested positive, ecotourism-directed behaviors resulting in local community engagement in public-private partnerships, involvement in tourism-related cultural programs, and willingness to contribute towards nature interpretation activities to support ecotourism objectives in the protected areas. While the homestay program encouraged local guardianship behavior, opportunities to improve and expand conservation efforts with the help of communities in the region could be further developed, requiring greater cooperation from concerned stakeholders in both public and private sectors.

The private sector-led initiative to develop ecotourism destinations in Nepal is low. Of the few, the most notable is the Annapurna-Dhaulagiri Community Eco-lodge trek developed by the private sector (Nature-treks.com) with support from the community. The lodges are built, owned and managed by the community. Meanwhile, the private sector plays a huge role in marketing the destination, providing vocational training on tourism services, and helping them practice organic farming, souvenir making and designed tourism packages. There are other initiatives by the private sector, such as the Manakamana, Chandragiri, and Kalinchok cable car services, which have aided in developing religious tourism and led to overall job creation and income generation for the local communities. The Manakamana cable car project is a classic example of how investment in infrastructure can lead to the development of a new destination capable of attracting many domestic and international tourists.

The following are key opportunities for ecotourism in Nepal:

Government's high priority for the tourism sector: The GON accorded high priority to the tourism sector. To facilitate investments, the NRB allowed commercial banks to raise 100 percent of their core capital through borrowings from both Indian BFIs (in Indian rupees), as well as convertible currency borrowings from foreign BFIs. The provision was also extended to development banks and finance companies limited to borrowing from Indian BFIs, but can use these funds to invest only in the productive sectors, such as tourism, agriculture, energy, physical infrastructure, and microfinance.[353] Furthermore, the NRB, through its monetary policy, made it mandatory for the BFIs to lend to priority sectors mentioned in Table 13.

[352] Ministry of Culture, Tourism and Civil Aviation (2019). Nepal Tourism Statistics 2018.
[353] World Bank (2019). Envisioning a future data ecosystem in Federal Nepal, Nepal Development Update

Table 13: NRB-defined Priority Sectors for Lending

Classification	Total Portfolio Lending to the Productive Sector
Type A-class Commercial Bank	Lend 25% of their total loans to productive/priority sectors • 10% of loans to agriculture • 15% of loans to energy and tourism
Type B -class Development Banks	Lend 15% of their total loans to priority sectors
Type C-class Finance Companies	Lend 10% of their total loans to productive sectors

Source: Nepal Rastra Bank, Monetary Policy (2019/20).

With prudent control exerted by the NRB, the commercial banks, development banks, and finance companies met their priority sector lending targets: 30.3 percent (agriculture), 24.7 percent (energy), and 17.6 percent (tourism), respectively.

Formulation of policies: The GON formulated its *Tourism Vision 2020* to attract 2 million tourists in the next two years. Similarly, the National Tourism Strategic Plan 2015–2024 was formulated with the objective of establishing Nepal as a leading tourist destination in the region and diversifying current tourism offerings. Some of the key takeaways of the strategic plan include a) promoting private sector investment, including FDI and public-private partnerships for the development of the tourism sector, and b) improving infrastructure, particularly in aviation.

Increase in the number of tourist arrivals: The number of international tourists traveling to Nepal recently increased after sharp declines due to political instability, the 2008/09 global financial crisis, and the 2015 earthquake. With a low of 538,970 visitors in 2015, the numbers rebounded to 753,002 visitors in 2016, 940,218 visitors in 2017, and 1,173,072 visitors in 2018, which is a significant and quick recovery for the tourism sector in Nepal.[354] The increase in tourist arrival opens up opportunities for private sector investment sectors directly and indirectly impacted by the tourism sector.

Growth of tourists from neighboring countries and an increase in domestic tourism: Although western tourists remain a strong source of tourism receipts, Nepal's tourism sector is benefitting from the economic growth of neighboring countries, such as India and China. Similarly, domestic travel and tourism have emerged as a growing and very significant market. Domestic tourism represented around 57 percent of direct travel and tourism GDP in 2017.[355]

3.2.6.2 Challenges

Overall, Nepal was not able to take advantage of its tourism resources. This resulted in underdeveloped high-value tourist products, thus positioning Nepal as a high-volume, low-value tourist destination.[356] This is evidenced by the relatively low tourism receipts. Nepal's international tourism receipt stood at

[354] Nepal Tourism Statistics (2016, 2017, 2018).
[355] World Travel and Tourism Council (2018). "Travel & Tourism Economic Impact 2018 – Nepal".
[356] Shoorabeer P. (2012). "Does tourism really matter for economic growth? Evidence from Nepal". Retrieved from https://www.nrb.org.np/red/publications/f_/webcrysis/ecorev/NRB_Economic_Review--Vol_24-1,_April_2012+4_Does_Tourism_Really_Matter_for_Economic_Growth_Evidence_from_Nepal%5BShoorabeer%20Paudyal,%20Ph.D.%5D.pdf.

an average of USD 670 per international visitor in 2017, which is close to one-third that of India and Thailand.[357]

Poor transport infrastructure and connectivity: Nepal was not able to take advantage of its tourism resources due to the poor quality of the transport infrastructure and tourist services. The poor road network, poor safety records of domestic airlines, and insufficient airports make it difficult and costly to access destinations with ecotourism potential. Without proper transport infrastructure, access to tourism destinations becomes time consuming, uncertain and uneconomical. Nepal's ranking is 112 out of 141 countries in terms of infrastructure and it scores below the South Asia average on indicators of digital access, electricity consumption per capita, road network density, and transmission losses in the power sector.[358] The poor infrastructure reduces tourist arrivals and makes for shorter stays to destinations having cultural and environmental attractions, making Nepal less attractive for investment, as the returns are low.

Lack of skilled labor: Besides infrastructure, the quality of facilities in tourist destinations and services do not meet the expectation of high-end travelers. A lack of skilled labor in the tourism sector is reported as a major constraint for scaling up tourism offerings in the mid- to high-end tourism segment. What is clear is that there is a mismatch of skills between the demand for and supply of skill sets.

Poor destination management: Poor destination management emerged as a major hindrance to the development of new destinations. Firstly, inadequate tourism services, such as water, waste management, communication, and electricity, are a major issue. Secondly, the development of new destinations is constrained by the lack of maintenance of deteriorated infrastructure, such as airports, trekking trails, small bridges, camping sites, etc. Thirdly, the lack of properly coordinated planning in protected areas reduced the tourist stays, average spending per tourist, and increased pressure on the fragile environment. Haphazard road construction destroyed many of the existing trekking trails. For example, the 16-day Annapurna trekking circuit was reduced to eight days. Other areas impacted in this way include the Manaslu, Kanchenjunga, and Makalu regions.

Dependency on international tour operators: Tour operators based out of Nepal are unable to compete with the international tour operators in terms of marketing and developing tourism products. As such, local tour operators are dependent on international tour operators for business. It is seen that many of the tourism products and packages are marketed by international tour operators abroad. This leads to a situation where a large portion of the revenue is retained by international tour operators and only a small fraction of that revenue is transferred locally. However, the current online technologies have opened opportunities for local tour operators to sell tourism packages directly to travelers at a lower rate than international tour operators and retain higher profits.

Strict regulation on tourism activities in protected areas and forests: Almost all ecotourism destinations and tourist attractions in Nepal are located in protected areas. The regulations established

[357] United Nations World Tourism Organization (2018). UNWTO Tourism Highlights. Retrieved from https://www.e-unwto.org/doi/pdf/10.18111/9789284419876

[358] World Economic Forum (2019). Global Competitiveness Index. Retrieved from http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf.

for conservation are strict in nature which makes it overly difficult and unattractive for private sector investment. Although permits for ecotourism are issued, the entire process is complex and lacks transparency. There is a need to have balanced regulation regarding conservation of the environment while, at the same time, enabling more economic opportunities for private sector investment.

Lack of access to funds and restrictive regulation on FDI: Although the government accorded high priority for the tourism sector and mandated banks and financial institutions to lend, access to finance is still lacking for the tourism sector to realize its full potential. The capital markets have not been able to provide much-needed financing as BFI largely dominates the stock market. Similarly, restrictive policies on investment and repatriation make it unattractive for foreign investors to invest. The inflow of foreign investment decreased by 25 percent from NPR 17.5 billion in 2017/18 to NPR 13.07 billion in 2018/19.[359]

3.2.6.3 Recommendations

There are several directions the GON can consider strengthening its ecotourism potential dramatically, some of which donors could also support in developing strategies and plans.

Focus on improving connectivity to key destinations: Improving connectivity to key destinations will require the identification of key tourist destinations (high potential development impact and feasibility) in each of the provinces and subsequent preparation of connectivity master plans along with exploration of air and road interconnectivity between the various provinces. This type of strategic direction could be provided with the help of external resources. Similarly, in the medium- to long-term, it will be important to construct and maintain road access to destinations to increase access and facilitate private sector investment. The development partners can assist in conducting tourism assessment and feasibility studies for each province. These studies should focus on identifying key tourist attractions, as well as assessing the socio-economic environment, infrastructure needs, and connectivity issues. Accordingly, tourism plans should be developed that include inter-provincial tourism plans.

Improve upon infrastructure and regulations: It will be crucial to identify needed tourism-related infrastructure and ensure that the infrastructure is budgeted and financed by the concerned ministries, provinces, and municipalities. This includes trekking and scenic trails, safe drinking water points, rescue shelters, visitor centers, touristic roads, water, solid waste, signage, as well as infrastructure to facilitate access to lakes, villages, and mountain tops. One focus should also be on improving the operational management of Tribhuvan International Airport and ensuring timely construction of Gautam Buddha International Airport and Pokhara International Airport to accommodate increased tourist arrivals, as envisioned by the *Tourism Vision 2020*. Furthermore, the provinces should evaluate upgrading domestic airports to accommodate more tourist arrivals with improved facilities, as well as assess reopening and facilitating private sector investment in local domestic airports. At the same time, it is necessary to upgrade aviation policies focused on regulations covering airspace, airline safety, and taxation on aircraft leasing. Development partners can assist the Civil Aviation Authority of Nepal (CAAN) to help meet the

[359] My Republica (September 5, 2019). External Sector Worsening Despite Economic Growth. Retrieved from: https://myrepublica.nagariknetwork.com/news/external-sector-worsening-despite-economic-growth.

aviation safety standard prescribed by the European Union Aviation Safety Agency (EASA) to remove Nepali airline companies from the blacklist of the European Union.

Ensure better coordination among key stakeholders to develop ecotourism destinations: In order to coordinate with key stakeholders, a national tourism steering committee comprised of key federal ministries, representatives of the provinces and private sector organizations need to be established. Additionally, with the new federal system of governance, it is important to demarcate authority regarding tourism and tourism-related infrastructure among the federal, provincial and municipal governments. Development partners can play the role of a coordinator and bring key stakeholders together to form the National Tourism Steering Committee.

Mandate destination management organizations (DMOs) to manage and develop destinations: Nepal could use some of the lessons learned from African countries, such as Rwanda, Zambia, Mozambique that mandated "African Park," a destination management organizations (DMO) to manage 100 percent of their National Parks, take full responsibility of and execute all management functions, and be accountable to the government. Nepal should consider adopting a similar model and mandate an international DMO to take charge of developing destination plans, as well as managing the various locations identified for tourism development. DMOs take a holistic approach for destination development and ensure mitigation of tourism negative impacts on the environment and local communities as well. DMOs facilitate dialogue among the private sector, public sector, and other stakeholders and help bring in understanding as to how each stakeholder's decision has a domino effect on the destination's long tourism value chain. The donor community, through its global networks, can help identify as well as absorb a certain portion of the DMO's fees and experiment with the idea of managing tourism destinations thorough DMOs.

Improved access to skilled labor: In order to increase access to skilled labor and ensure a supply of skilled labor, local training and capacity building programs at the destination level can be offered through the Public-Private Partnership arrangement with selected business organizations. The Ministry of Education and the Council for Technical Education and Vocational Training (CTEVT) should work with tourism industry entrepreneurs to identify the demand for skills in the short-, medium- and long-term and accordingly create and develop a framework for sector skills based on the destination development plan. Accordingly, a training curriculum should be developed to ensure the supply of skilled labor by sourcing external trainers in the short term. In line with the training curriculum, Training of Trainers programs must also be developed to ensure a steady supply of trainers. Development partners can provide technical assistance to organizations (e.g., CTVET) for capacity building, hiring qualified trainers, aiding in the development of training curricula, and introducing training of trainer programs.

Review protected areas and community forests regulation and policies: The various policies relating to governance and utilization of protected areas and forests need to be reviewed and clarified to facilitate leasing, permits and licenses within protected areas and forests. These should include the private sector and the community's roles in policies that enable engagement in economic activities. The donor community can assist policymakers in reviewing protected and community forest regulation and policies by keeping the vulnerable and disadvantaged at the center of policymaking to avoid conflict and ensure sustainable and responsible tourism.

Box Story 7: Vulnerable Communities in Natural Resource Management

Though local communities around the world have been in the forefront of managing natural resources, disadvantaged groups who are highly dependent on natural resources are still excluded in natural resource governance. The disadvantaged groups are included in principle, however, in practice their special needs are not taken into consideration. Due to lack of education and confidence, and social and cultural habituation, disadvantaged people can hardly influence the decisions made. When natural resource governance is implemented without ensuring its credibility, reliability, transparency, participatory decision-making processes, and equitable benefit sharing, it will raise issues of conflicts and inequalities. Furthermore, the new federal structure along with historical cultural practices will complicate the involvement of local communities in natural resource management

To address this, it is important to ensure that the existing legislative structures and policy framework are utilized to reform social structures and support social transformation. This can be the foundation of inclusion and greater engagement as it can prevent systemic discrimination and oppression. Furthermore, a responsive governance with focus on participatory approach and well-being of the communities should be key while designing any NRM programs, plans and policies. Furthermore, since the government lacks adequate and valid data concerning the availability as well as potentiality of natural resources at different federal structures, urgent initiation needs to be taken to collect nationwide data to aid the designing of a smart policy for sharing of resources and revenue in federalism. This will help minimize conflicts and facilitate the designing of a neutral 'formula' of equitable distribution for the National Natural Resources and Fiscal Commission (NNRFC).

Second, as per the current global UN framework - No One Left Behind - studies should be conducted to explore the quality of participation and develop new ways of including disadvantaged groups in the decision-making processes. One initiative to tackle the challenge is a UN initiative of Inclusive Systemic Evaluation (ISE) approach and the Gender Equality, Environments, and Voices from the Margins (GEM) Framework, which brings together trans-disciplinary evaluation methods to measure the inclusiveness of interventions as well as aims to give guidance on how to include marginalized groups in development processes (Stephens *et al.* 2018). Third, there needs to be a rights-based approach that requires the citizens to be aware of their rights and demand the realization of their rights, and duty bearers to bear the responsibilities and be accountable for the decisions they make (Ostrom 1990). Only equitable benefit sharing and rational power sharing can empower the vulnerable communities.

Along with better policies and different initiatives, it is also important to provide the vulnerable and disadvantaged communities with the necessary information and increase transparency in the governance procedures.

Source: From Blueprints to Empowerment of Disadvantaged Groups in Natural Resource Governance: Lessons from Nepal and Tanzania, 2019

4.0 DISASTER RISK MANAGEMENT: CONSTRUCTION MATERIAL SUPPLY CHAIN THAT DELIVERS QUALITY PRODUCTS FOR DISASTER-SAFE INFRASTRUCTURE

4.1 INTRODUCTION

The global costs of disasters are continuously rising, with the last two decades witnessing a dramatic rise of 151 percent in direct economic losses from climate-related disasters, thus making it necessary to take mitigation measures, rather than recovery only.[360] Mitigation is one of the positive links between disasters and development. Mitigation has become a collective term used to encompass all actions taken prior to the occurrence of a disaster (pre-disaster measures). This includes long term risk reduction and preparedness measures. Mitigation measures can help a community reduce future economic losses. The risk reduction measures of mitigation are often placed in the pre-disaster time frame. Furthermore, as populations and economies continue to grow, countries need to be more intentional in improving risk mitigation and resilience. On the one hand, additional people and infrastructure may likely push a population to areas that are more prone to disasters. On the other, a growing economy can provide more resources to afford better mitigation measures.

While the direct and indirect economic costs of the disaster remain both significant and worrisome for the countries and areas impacted, the estimation of the full economic costs of disasters is even more challenging. Hence, in assessing disaster risk management (DRM), losses that include physical capital, financial capital, natural capital, and human capital are key factors to be considered. These factors have a multiplier effect on reduced economic activity. While the government is a key actor facilitating the DRM in a country, the private sector is an integral part of the disaster risk reduction (DRR) system to enhance disaster resilience. Therefore, this assessment focuses on promoting disaster-safe infrastructure and enhancing resilience towards the loss of physical and financial capital by engaging the private sector through market-based solutions.

Nepal continuously faces disaster events with impacts of high magnitude and intensity from a multitude of natural hazards. Given its fragile geography and steep topography, the country ranks high in various disaster indicators: twentieth most disaster-prone country in the world; fourth in terms of climate risk according to the Global Climate Risk Index; and eleventh in terms of global risk for earthquake

[360] UN Office for Disaster Risk Reduction. (2018). New report highlights economic cost of disasters. Geneva: World Metrological Organization. Retrieved from https://public.wmo.int/en/media/news/new-report-highlights-economic-cost-of-disasters.

occurrence and impact.[361] As such, Nepal needs to seize every opportunity to improve the quality of infrastructure, one of which has presented itself in the current reconstruction activities for damaged infrastructure from the 2015 earthquake, including 811,000 homes, 8,200 schools, and 1,200 health facilities.

Since the earthquake, Nepali households, business establishments, and the GON continue to reconstruct damaged houses and buildings. However, there was limited effort to check on the quality of the new infrastructure to ensure that they can withstand the next disaster event. To expect that GON entities will perform that role is unrealistic, given their limited and already-stretched capacity and resources. Hence, Nepal needs to complement any regulatory requirements with market-based approaches to take full advantage of markets in providing the factors that contribute toward disaster-safe infrastructure, as well as the discipline against conduct of actors that weaken the market's contribution to disaster safety.

Construction engineers consider three factors that contribute toward disaster-safe infrastructure, including a design meeting established building codes, quality construction materials, and competent workforce. Of the three, ensuring the supply of good quality construction material easily lends well to a market approach, by improving the performance of the construction material supply chain to provide quality construction materials at standardized prices. However, in the current scenario, the construction material supply chain co-mingles sub-standard products and products with degraded quality with the rest of the products in the market, thereby exposing Nepalis to a higher risk of building damage during disaster events. Furthermore, wholesale and retail distributors do not practice standardized pricing, thereby likely raising the prices paid by Nepali consumers. Markets are supposed to have the ability to self-correct for these poor product quality and pricing practices, but in the case of Nepal's construction material supply chain, severe information asymmetry biased against end-users have created acute market inefficiencies that have led to the failure of the supply chain to correct its poor performance in an organic and systemic manner.

Likewise, disaster risk financing (DRF) and affordable insurance products are other market-based tools to manage the loss of financial capital against disasters and can make poor and vulnerable communities more resilient. With the growing share of new construction and reconstruction being financed through mortgaged loans that also mandates an insurance coverage, banks and insurance companies have the potential to structure the terms of the mortgage loan as well as price the insurance products in such a manner that would incentivize borrowers to adopt risk-reducing construction practices, and as result create a cascading demand for quality construction materials. Such demand is essential to stimulate the construction material supply chain to improve performance through better product handling and standardized pricing practices commensurate with quality and contribute toward building disaster-safe infrastructure in the country.

[361] Ministry of Home Affairs, Government of Nepal (2017). Disaster Risk Management in Nepal: Status, Achievements, Challenges and Ways Forward. National Position Paper for the Global Platform on Disaster Risk Reduction 2 .2-26 May 2017, Cancun, Mexico.

This sub-study addresses two research questions around market-based approaches to develop disaster-safe infrastructure and to enhance resilience of the Nepali people:

- What factors impede investments in the construction material supply chain that created gaps in providing standard construction materials in the market, at the right quantity, place, time, and price?
- What hinders the development and widespread use of financial and insurance products that reduce disaster risk and improve people's ability to recover from disaster events that damage homes and public buildings?

4.2 METHODOLOGY AND LIMITATIONS

The research questions were addressed by using the Structure Conduct Performance (SCP) framework. The SCP framework is considered the pillar of the industrial organization theory and is powerful in analyzing the performance of markets and industries. The framework asserts that market performance is caused by the conduct of players in the market, such as product and pricing practices; this conduct is, in turn, caused by the structure of the market including the number and size of enterprises, policy regimes that determine entry and exit of enterprises, and market information, among others. Nevertheless, the relationship between structure, conduct and performance is not necessarily unidirectional; they can flow in the opposite direction, too.

To make the analysis tractable, the sub-study limited its scope to residential buildings and public complexes (places of mass gatherings, like commercial complexes, hospitals, schools, etc.) and four key materials of construction (bare shell): brick, cement, steel, and sand and aggregates. The study applied the SCP framework to identify market gaps in the supply of standard construction materials, as well as the appropriate interventions required to address those gaps. The study aimed to identify interventions in the supply chain that would allow agents to improve the performance of the supply chain in an organic and systemic manner. The study adopted a combination of primary and secondary research, field visits, consultative meetings, and key informant interviews to gather data and information for the analysis. Appendix 22 provides a more detailed description of the methodology.

4.3 FINDINGS

4.3.1 Expanding Disaster-safe Infrastructure and Enhancing Disaster Resilience

The National Planning Commission reported that losses from the 2015 earthquake reached an estimated $9.38 billion,[362] out of which housing and human settlements (HHS) infrastructure sustained most of the loss at $3.5 billion. A significant part of this amount represented the value of 811,000 homes, 8,200 schools, and 1,200 health facilities that were damaged during the earthquake.

The damages exposed the weaknesses of HHS infrastructure that did not have any seismic-resistant features, were not in accordance with the building codes, or were constructed using poor-quality

[362] National Reconstruction Authority (2019). Introduction. Kathmandu: National Reconstruction Authority. Retrieved from http://www.nra.gov.np/en/pages/view/fk2lRwucsHVwn9q-LAxpTW9mGJgIRz25rUWNDHdbkYk

construction materials by an inadequately trained workforce. A USAID private sector landscape assessment[363] reported that the current state of quality assurance and control for construction materials is fragmented. There is a lack of uniform standards or an effective verification system. These deficiencies cast doubt on the entire industry and depress consumer confidence on the entire market for construction materials, raises the risk exposure of Nepalis, and multiplies the adverse impact of disaster events on economic activities. Since the private sector is an integral part of the country's disaster risk management system, this sub-study focused on improving the construction material supply chain and on enhancing resilience so the private sector can provide market-based solutions that contribute to disaster-safe infrastructure and disaster resilience, in an organic and systemic manner.

To this end, the sub-study examined the inefficiencies in the market that created gaps in supplying standard construction materials for the Nepali consumers. The study examined four core construction materials including brick, cement, steel, and sand with aggregates, which form the major structural components of infrastructure.

4.3.1.1 Construction Materials' Standards in Nepal

The use of good quality construction materials is vital to build disaster-resilient structures. For this, every country sets standards of different raw materials and products used in the construction sector and the manufacturers manage transparent product quality control systems and provide relevant material quality information as needed by consumers. For Nepal, the National Bureau of Standards and Metrology (NBSM) is the principal agency for designing, implementing and monitoring the standards of construction materials.[364] Anyone who provides goods and/or services must obtain a license under the Nepal Standards (Certification Mark) Act 2037 to use a certification mark with respect to any goods or processes. Moreover, Article 8.2 of the Act clearly states, "A person who has obtained license shall also not use a certification mark in relation to any article which does not conform to the prescribed standards, or any symbol likely to create confusion regarding the design thereof." Violation of the provisions can lead to penalties of a maximum of one year or a maximum of 5,000 NPR or both, in addition to the confiscation of substandard goods. The Nepal Standard (NS) for bricks, cement, and steel are listed in Appendix 20. To date, NS standards for sand and aggregates have not been developed.

4.3.1.2 Hindrances to Supply Standard Construction Materials in the Market

Any company that obtains an NS mark should comply with the NS standards. This is further discussed in Section 4.3.1.1. However, the lack of monitoring makes it difficult to ensure that standards are adhered to. In addition, poor product handling practices could degrade the quality of construction materials as they move through the supply chain, up to the point of final sale. Tables 14 to 17 present the gaps in supplying standard quality construction materials at each stage of the supply chain for the four core construction materials, as well as propose potential interventions and actions to address those gaps.

[363] USAID. (2015). USAID/Nepal Private Sector Engagement Assessment - Construction Sector. Kathmandu: USAID.
[364] Hereafter, the term "construction materials" refers to the group of four materials studied in this study.

Table 14: Supply Chain Constraints and Interventions Required for Bricks

Stage of the Supply Chain	Gaps in Providing Standard Construction Materials	Proposed Interventions and Expected Actions
Production	The standards for bricks are prescribed to be voluntary and not mandatory, thus creating under-regulation in the sector. Besides, there are no guidelines for process control to produce good quality bricks. Since the standards are voluntary, manufacturers have developed their own standards leading to multiple ranges of products available in the market. This increases information asymmetry between the buyers, as well as the sellers. In addition, there are multiple types of bricks introduced in the market, such as Chinese bricks and interlocking bricks/earth bricks that do not have prescribed standards.	Conduct a study on the brick industry of Nepal to identify the demand and supply of classes/categories of bricks, and on which to base the revision and implementation of regulations in order to facilitate investments in the sector.
	Brick kilns in Nepal employ manual labor for processing since most of the kilns are semi-controlled. Lack of skilled labor lead to the fluctuation in precision levels leading to quality inconsistency within the same batch of the product. Moreover, they are established on leased lands, hence, it is difficult for manufacturers to invest additionally on mechanization on a leased asset.	Undertake a performance assessment on the processing mechanisms used in Nepali brick industries to help identify ways of introducing technologies best suited for industries to produce a consistent quality of bricks.
	Since the major energy input for brick manufacturing is the sun (as a natural dryer), there is no incentive for manufacturers to invest in mechanized plants with mechanized driers.	Conduct a study on cost-benefit analysis of using sun-drying and mechanized drying in brick industries given Nepal's climatic situations to understand the best type of technology suited for Nepal to be presented to the brick manufacturers.
	The mechanization of the brick production process requires electricity. Most of the existing brick kilns either do not have access to grid electricity, or are located on rural electricity feeders, which are prone to power outages and unstable power quality. This is a significant barrier to adopting new technologies since this would require expensive investments in power generation such as a back-up diesel generator by brick makers.	Undertake an assessment to understand the energy demand in Nepali brick manufacturing and analyze the energy mix best suited for the existing scenario as well as under a mechanized operations scenario.
Handling, Storage and Transportation	A system of managing bricks in large piles leads to higher transportation losses in Nepal. Unloading of bricks lacks care, as they are usually thrown, or dumped into the ground leading to chipping of bricks and, in some cases, causing cracks in the bricks.	Implement proper protocols and standards for warehouse and inventory management and adopt good handling practices to preserve quality as the products moves through the supply chain. For example, introduce pallets for the warehousing of bricks and the use of specialized trucks that

Stage of the Supply Chain	Gaps in Providing Standard Construction Materials	Proposed Interventions and Expected Actions
		can load and unload mechanically to decrease transportation losses. Certification of wholesale and retail distributors based on warehouse infrastructure, inventory management, and product handling (transport and storage) practices, to inform end-users' purchase decisions.
Point of Sales	Consumers should be aware of the quality of the bricks they purchase. This is where the proper information on labeling and packaging comes into play. However, bricks as a commodity in Nepal do not have any information on product quality, price, handling and storing conditions. Hence, consumers are dependent on the supplier for the information on quality.	Increase awareness among consumers on the relation between quality parameters and strength of bricks to their total cost and risk is essential. Conduct awareness campaigns to provide information on the types of products available in the market and practical ways of identifying the quality of such products.

Table 15: Supply Chain Constraints and Interventions Required for Cement

Stage of the Supply Chain	Gaps in Providing Standard Construction Materials	Proposed Interventions and Expected Actions
Production	With the growth of the domestic cement industry, the producers have diversified their products into a wide range of types and strengths of cement. Although there are standards for Nepali cement, there is no grading system available for categorization of cement based on their strength, which according to manufacturers is a hindrance for export. Recently, the GON introduced the grading system based on the strength of the cement. Nepali cement will be classified into 33, 43, and 53 grades, on par with international standards. However, lack of clarity and suspicion remain about how this will be implemented.	Increase clarity on how NBSM will implement and monitor the classification to improve implementation.
Handling, Storage and Transportation	The supply chain actors at this stage lack proper information on inventory management because of two major reasons: • There are no mandatory provisions for handling and storage of cement in the supply chain. • Even if these actors are made aware, there is no incentive for them to invest in proper handling and storing facilities because contractors who focus on financial incentives, such as commission and credit lending provided by the retailers drive the demand. In addition, end-users do not have the capacity and information to differentiate cement products based on quality to guide their purchase decisions that could affect the distributors' sales.	Implement proper protocols and standards for warehouse and inventory management, as well as adopting good handling practices, could result in preserving the quality of cement products during handling, transport and storage. Establish/support of shared warehouses for many small retailers at different locations could help maintain the quality of cement, as well as serve as a business opportunity for the private sector. Develop a monitoring mechanism for warehousing to ensure compliance with warehousing requirements. Certify wholesale and retail distributors based on warehouse infrastructure and inventory management and adopt good product handling practices to inform end-user purchase decisions.
Point of Sales	The end consumers are the ones who should ensure the quality of cement before purchase. For this, they should be made aware of the quality of the cement they purchase at the retail level. This will require proper information on labels displayed on the cement packages. However, the literature[365] reports that some cement	Certify retailers, based on the quality of warehousing facilities and on proper labelling of cement products to inform consumers as they make purchase decisions.

[365] Mishra, A. K., & Chaudhary, U. (2018). Assessment of Cement Handling Behaviour For Selected Construction Sites of Bhatbhateni Supermarket. Journal of Advanced Research in Construction and Urban Architecture, 3(3), 1-11. Retrieved from

Stage of the Supply Chain	Gaps in Providing Standard Construction Materials	Proposed Interventions and Expected Actions
	products lack proper labeling. Once the consumers can differentiate the product based on their labeling and based on the goodwill of the provider, they can pressure contractors to purchase cement from the retailer.	Enforce cement product labeling requirements. Increase the awareness among consumers on the relation between quality parameters and strength of cement products to total cost and disaster risk level associated with the infrastructure.

https://www.researchgate.net/profile/Anjay_Mishra/publication/327797165_Assessment_of_Cement_Handling_Behaviour_For_Selected_Construction_Sites_of_Bhatbhateni_Supermarket/links/5ba4e3df92851ca9ed1b1855/Assessment-of-Cement-Handling-Behaviour-For-Selected-Construction-Sites-of-Bhatbhateni-Supermarket.pdf

Table 16: Supply Chain Constraints and Interventions Required for Steel

Stage of Supply Chain	Gaps in Providing Standard Construction Materials	Proposed Interventions and Expected Actions
Production	Steel rods for construction purposes are manufactured using billets[366], which are primarily imported from India. The steel rods must comply with the strength characteristics specified by the NBSM. For each bundle/coil of bars/wires, a tag should be attached, indicating cast/lot number, grade and size, based on the NS standard. Recently, there was a growing trend of manufacturers adding metal scraps and carbon to the primary billets in the production of steel rods that meet NS-prescribed strength. This practice increases the deviation of rod strength from the NS-prescribed standards, compared to rods produced using primary billets.	Provide information on the raw materials used in production to inform consumers in making proper purchase decisions. The rationale is that the industry accepts the use of metal scraps in the production of rods that meet NS-prescribed standards, but there remain high deviations in strength for rods produced using metal scraps and carbon.
Handling, Storage and Transportation	At the distribution stage, wholesale and retail distributors have poor product handling, storage and transport practices, such that the strength of steel rods is compromised as it moves through the supply chain. For example, warehousing of rods should take place in humidity-proof areas under controlled moisture condition. However, during the monsoon season, when the construction sector slows down, wholesale and retail distributors store steel rod in open spaces, exposing the product to unfavorable climate conditions, which leads to corrosion and general degradation of product quality. Another example, wholesale and retail distributors face acute challenges in transporting steel, given Nepal's poor road system, and inadequate capacity at ports and railways.[367] These problems lead to higher cost and delivery delays of raw materials and finished steel products.	Certify retailers based on warehousing proper protocols and standards for warehouse and inventory management. Also adopt good handling practices, which together could better inform consumers in making purchase decisions that will penalize poor distributors and reward good distributors. Establishment/Support of shared warehouses for many small retailer distributors at different locations could help maintain steel rod quality, as well as offer a business opportunity for private sector that can lease those properties.
Point of Sale	Well-informed contractors constructing bigger commercial complexes often demand certificate of standards when purchasing steel rods at the retail level. This demand represents only a small share of total demand. However, contractors in small construction projects do not demand such certificate of standards. These contractors can only conduct a visual assessment of steel rod quality, such as the degree of corrosion. Many contractors do not assess the degradation of steel rod strength from repeated bending and straightening as the product moves through the supply chain.	Increase the awareness to encourage small contractors and consumers to demand certificate of standards when purchasing steel rods. Train small contractors and consumers on practical ways to evaluate steel rod strength and overall quality.

[366] Billets are created directly via continuous casting or extrusion or indirectly via hot rolling a block of steel (also called ingot). Billets are further processed via profile rolling and drawing.
[367] New Business Age. (2017). Experts Views on the Iron and Steel Industries in Nepal. Kathmandu: New Business Age (P) Ltd. Retrieved from https://newbusinessage.com/MagazineArticles/view/1736

Table 17: Supply Chain Constraints and Interventions Required for Sand and Aggregates

Stage of Supply Chain	Gaps in Providing Standard Construction Materials	Proposed Interventions and Expected Actions
Production, handling and sale	Suppliers use political connection to secure rights for sand and aggregates extraction. In many places, criminal gangs, well-connected people, usually backed by political leaders, and in some cases, officials in agencies tasked to monitor this activity, were found to support illegal excavation.[368] These activities have continued post-federalization where people's representatives at the local level are found to be active in the extraction and supply of boulders, sand and aggregates.[369] In such a scenario, implementing quality standards in the supply chain will be quite difficult. A study conducted to examine the quality of sand in construction its supply management in the construction activities found that only 37 percent of respondents prioritized good quality and only 23 percent of the respondents performed standard tests for sand quality, while the remaining 40 percent ignored quality considerations in procuring sand.[370] Study respondents included members of the Society of Consulting Architectural and Engineering Firms (SCAFE), sand quarry operators, suppliers; and sand washing plant operators in Kathmandu.	Increase the awareness among consumers regarding the impact of the quality of sand on the quality of infrastructure as well as the cost of construction. For example, construction projects that use 100g of Type A sand that has 5g of clay, will have to use a higher proportion of cement from 5g to 10g. The use of Type B sand that has 2g of clay will need 5g of cement. Increase awareness and the use of simple tests to determine the proportion of clay in sand, such as a decantation test.

[368] Khatiwada, D. K. (2016). Disaster Under-Insurance in Nepal. Kathmandu: Samriddhi Foundation. Retrieved from https://samriddhi.org/publications/disaster-under-insurance-in-nepal/.
[369] Ghimire and Karki. (2019). Illegal excavation puts settlement at risk. Kathmandu: Centre for Investigative Journalism-Nepal. Retrieved from https://cijnepal.org.np/illegal-excavation-puts-settlement-at-risk/.
[370] Joshi, M. P. (2017). Construction Sand, Quality and Supply Management in Infrastructure Project. International Journal of Advances in Engineering and Scientific Research, 4(4), 1-15. Retrieved from https://www.researchgate.net/profile/Madhav_Koirala3/publication/318338596_CONSTRUCTION_SAND_QUALITY_AND_SUPPLY_MANAGEMENT_IN_INFRASTRUCTURE_PROJECT/links/5c2734949285 1c22a34c9701/CONSTRUCTION-SAND-QUALITY-AND-SUPPLY-MANAGEMENT-IN-INFRASTRUCTURE-PROJECT.p.

4.3.1.3 Factors Impeding Investments in the Supply Chain that Created Gaps in Providing Standard Construction Materials

With the increase of competition and enabling technologies, many firms have turned to supply chain management as a central part of their business model. Firms are increasingly exploring ways to leverage their supply chains, and systematically evaluate the role of suppliers in their activities. As cited by Kannan and Tan (2002)[371] leveraging the supply chain allows the firms to exploit the capabilities, expertise, technologies, and efficiencies of their suppliers. Thus, close links between the buyer and seller have become a critical indicator of high and low performers in global supply chains.

Asymmetric information: The construction sector heavily relies on suppliers of building materials, contractors, subcontractors, and experts like engineers and designers. The construction supply chain is composed of many manufacturers, importers, wholesale and retail distributors, as well other agents providing facilitating services such as laboratory testing, financing, and transportation. Shaping such complex supply chain to deliver standard quality construction materials in the market faces massive coordination problems, as the flow of market information up and down the supply chain, remains challenging. In addition, severe information asymmetry plagues the construction supply chain, largely in favor of suppliers and biased against consumers. Lacking sufficient market information, consumers make purchase decisions under great uncertainty, which weakens the connection of their purchase decisions with product quality, prices, and good product handling practices. In effect, consumers fail to reward or penalize suppliers' business model based on quality, prices, and good product handling practices, and the supply chain remains unable to correct for poor performance. As a result, suppliers are less likely to supply quality materials that are worth higher rates if there was perfect information in the market thus, yielding a mix of low-quality products in the market. The same situation holds true in the case of contracting for construction services. There are no mechanisms in Nepal that rate or certify contractors based on their past performances. Although there are few firms operating on a large scale that get categorized from grades A to D, not all contractors get rated.[372] Hence, clients do not know the exact qualification/rating of the contractor, allowing the latter to conceal any negative past performance record. As a result, customers choose contractual partners – from subcontractors, suppliers, and designers – with very limited information, which raises the likelihood of undesirable construction performance and outcomes.

Monitoring and auditing supplier performance: A key issue in contract management is the monitoring of the supplier's performance to ensure all standards are met. There are two key mechanisms through which the performance of suppliers is monitored – supplier quality surveillance (SQS) by a regulator, and performance rating by a client. For SQS, the NBSM is the sole regulator to monitor the quality standards of all the products available in the market (apart from the food products and pharmaceutical products).[373] Given their limited resources and capacity to monitor all the products

[371] Kannan, V. R., & Tan, K.-C. (2002). Supplier Selection and Assessment: Their Impact on Business Performance. Journal of Supply Chain Management, 38(4), 11-21. Retrieved from https://bit.ly/2O8t34f

[372] Grading is only mandatory for contractors bidding for public construction projects.

[373] Nepal Law Commission. (1980, September 11). Nepal Bureau of Standards and Metrology. Retrieved 12 24, 2019, from https://bit.ly/2RxTBxY.

in a regular manner, assuring the quality of each of the material available in the market is near to impossible. Although there are multiple institutions, such as the Ministry of Industry Commerce and Supplies,[374] and District Administration Offices,[375] that work to monitor various aspects of quality assurance in the market, all the materials collected for testing are handed over to the NBSM laboratory for quality testing. As such, gaps in quality surveillance by the regulator is common.

On the other hand, client-led performance ratings in the construction sector of Nepal are non-existent, even though the rating of products and services has incredible power to promote good performance. However, there are currently no platforms where a client can rate their contractors or suppliers' performance or services. Hence, the market lacks the ability to penalize suppliers for poor product quality and contractor for poor services.

Liability laws: Liability laws ensure that the manufacturers, distributors, suppliers, retailers, and others who are involved in the supply chain, are held responsible for the failure of products or services they deliver. However, Nepal's construction sector is highly politicized, and the contractors and suppliers themselves occupy many of powerful legislative positions. For instance, more than 300 construction company owners were elected in the 2017 local elections and there are also parliamentarians who are contractors. Therefore, even if they deliver sub-standard products or default on their services, they have the connections to easily escape from any liability. Under Nepal's existing laws, no party is held liable for structural flaws or problems in the building once it is in use. Since liability against structural flaws is not concentrated with one or two entities, no one in the construction ecosystem guarantees that every factor that contributes toward building a disaster-safe infrastructure, such as an acceptable design, quality construction materials, and competent workforce, is used in a given construction project. In addition, the law does not require any party to obtain insurance against structural flaws. As a contrasting example, Hong Kong, which earned the highest rank in terms of dealing with construction permits in the World Bank *Ease of Doing Business* indicator, clearly locates the liability against structural flaws or problems in the building once it is in use, on the architect or engineer, professionals in charge of the supervision, and construction company. Since liability is clearly located, even if the law does not require any party to obtain insurance, such coverage is commonly taken in practice. However, even if there are contractual obligations for structural flaws, enforcement of such contracts in Nepal is weak. Nepal ranks low (151 of 190 countries) on contract enforcement, reflecting a long period of settlement (910 days compared to 120 days for Singapore, which has the best record of regulatory performance), high cost of litigation (27.3 percent of the value of the claim, compared to 0.1 percent in the case of Bhutan), and poor quality of the judicial process (index of 6 out of maximum score of 12).[376]

Lack of financial incentives to mitigate affordability issues of building disaster-resilient structures: Increasing resilience can increase various components of the life-cycle cost of infrastructure that, at times, lead to affordability challenges that compromise quality standards. Solutions might include either an increase in funding through affordable and actuarially fair insurance schemes, incentives in

[374] Under the work area of the Supply Management and Consumer Interest Protection division.
[375] Provision of market inspection under the Local Administration Act 2028.
[376] World Bank. (2019). Ease of Doing Business. https://www.doingbusiness.org/en/rankings

taxes, user fees, or transfers, hence, distributing the risk and cost among various stakeholders. However, very few mechanisms currently exist in Nepal to mitigate the affordability issues and among those that are existent has a very low uptake and not widely used. Therefore, consumers start construction projects based on a limited budget that may be insufficient to include disaster-safe construction practices and features (See Section 3.2 for more on financing for disaster resilience).

4.3.1.4 Strengthening the Construction Sector Ecosystem

While reinforcing the supply chain of construction materials is essential, it is not enough to build a disaster resilient structure. Design and implementers of the design play an equally important role. Nepal has building codes and standards when it comes to designing and building infrastructure. The Building Code was first published in 1994, and a later version was published in 2015, known as Guidelines for Earthquake-Resistant Building Construction: Low Strength Masonry. These regulations are to be implemented by the owner/builder with some assistance from technicians. These also act as a basic guideline for architectural design and construction detailing for the contractors to build the buildings.

The Building Code designates provisions, such as:

- Delineating the requirements during site selection for the construction of buildings considering the primary geological, as well as secondary seismic, hazards.
- Delineating site investigation requirements like foundation soil classification and safe bearing capacity.
- Providing details on structural layout, restrictions on plan projection, and the type and quality of construction materials to be used.
- Laying out design procedures, according to importance factor[377] of the buildings (see also Appendix 21).

While there are set standards, their implementation is suspect. Enforcement of building codes, especially in the newly built apartment buildings, remains difficult primarily because the role is distributed to many agencies, including the private builders, consulting engineers, as well as municipal officials who often overlook standards, given the widespread culture of bureaucratic corruption.[378] Moreover, the Asian Development Bank's 2019 Country Diagnostic report for Nepal[379] indicates that construction workers are not trained to work according to the code and, worse still, pressure is often applied to builders to cut costs by not following the code. The report also mentions that while such issues cannot be addressed fully in the immediate term, the allocation of additional resources to enforce the building

[377] Important buildings mean those buildings which either house facilities essential before and after a disaster. (For e.g., hospitals, fire and police stations, communication centers, etc.), or which by their very purpose have to house large numbers of people at one time (e.g., cinema halls, schools, convention centers, etc.), or that have special national and international importance (e.g., palaces, etc.), or that house hazardous facilities (e.g., toxic or explosive facilities, etc.).
[378] Devkota, K. (2018). Handbook of Research on Urban Governance and Management in the Developing World. In J. Mugambwa, & M. W. Katussimeh, Advances in Electronic Government, Digital Divide, and Regional Development (pp. 159-171). Hershey PA: IGI Global. Retrieved from https://bit.ly/3aQ8qUm.
[379] Asian Development Bank. (2019). The Enabling Environment for Disaster Risk Financing in Nepal: Country Diagnostics Assessment. Manila: Asian Development Bank. Retrieved from https://reliefweb.int/sites/reliefweb.int/files/resources/environment-disaster-risk-financing-nepal.pdf

code, as well as more formal training for construction workers (including apprenticeship and licensing programs), could have a beneficial impact on building code compliance, even in the short term.

Another means of ensuring code compliance is to promote skills testing certification requirements for residential buildings and commercial complexes. Currently, there are institutions like the Council of Technical Education and Vocational Training (CTEVT) that provide skills certificates; however, its graduates usually acquire the certificates to apply for jobs abroad. If the skills testing certification is brought into practice, it would create a market for good quality and credible workers. In terms of designers, it is essential that the mandatory registration of engineers at the respective local level (even if they are registered with Nepal Engineering Council[380] be reverted and revised as it promotes anti-market practices and creates market distortions.

Hence, creating demand for standard construction materials, on the one hand, will require consumer awareness and minimize the existing information asymmetry. On the other hand, consumers can be incentivized to use standard construction materials (currently equivalent to costlier products) by creating market mechanisms under the disaster risk financing mechanisms.

In Nepal, the law requires only an inspection by an in-house engineer at various phases of construction, a process that can be easily compromised due to the absence of independent third-party verification. A more robust inspection may require an external engineer or firms to conduct scheduled as well as unscheduled inspections at various phases of the construction project. In addition, final inspection after completion of the construction project is conducted by a government agency only. A more robust inspection may require an external engineer to complement the inspection done by a government agency.

4.3.2 Enhancing Resilience to Loss of Financial Capital

DRF is a useful tool to manage the loss of financial capital against disasters. The main component while developing DRF strategies is the coordination between the government and financial policymakers because only then can the population, businesses and governments have the resources necessary to manage the adverse consequences of disasters, thereby ensuring financial and economic resilience.

4.3.2.1 Insurance Policies and Products for Disaster Resilience in Nepal

Development of Insurance Products for Disaster Resilience

The annual report by the Insurance Board (IB), which is the regulator of the insurance industry in Nepal, showed that the insurance penetration was 1.6 percent of the GDP for the FY 2013/14.[381] These numbers stood at 2.7 percent for emerging markets, for Association of South East Asian Nations (ASEAN) at 3.3 percent of GDP, and 3.1 percent of GDP for emerging Asia, respectively, for the year

[380] Nepal Engineering Council is the national institution that registers the engineers as per their qualifications.
[381] Insurance Board of Nepal. (2014). Annual report 2071. Retrieved from http://www.bsib.org.np/images/download/Annual%20Report%202071%20Final%20Approved.pdf.

2014.[382] The insurance premium per capita in Nepal is USD 11.4, falling well below the USD 134 for emerging markets, USD 131 for ASEAN countries, USD 61.3 for Africa, USD 55 for India, and USD 40 for Sri Lanka.[383]

Several studies have cited a number of reasons that have impeded the development of suitable insurance products in Nepal, including the following.

The insurance industry is tightly regulated, and provision of actuarially fair premium calculation is absent. The Insurance Board (IB) is the regulating agency of insurance industries in Nepal. It is entrusted to formulate necessary policy for systematizing, regularizing, developing and regulating the insurance business. In case of disaster risk insurance, the IB developed limited products, given that property insurance in Nepal was only introduced in 2018, thus, consumers have limited options for insurance coverage. Insurance companies cannot create market-oriented products, as they are regulated by the IB.

Insurance premiums around the world are based on sound underwriting and actuarial studies. Like any business, insurance companies need to price their products at competitive rates to gain market share and earn remunerative return on investment. The insurance premiums in Nepal, on the other hand, are tariffed. Currently, annual premiums of residential buildings are fixed by the IB at NPR 5 per NPR 10,000 (USD 0.05/100)[384] and NPR 15 per NPR 10,000 (USD 0.15/100) for commercial buildings. However, these rates are not based on robust actuarial studies that account for geographical seismic rating and the quality of infrastructure asset being covered.

A study by Khaki and Khatiwada (2016) reported that though Nepal is not considered as a high-risk zone as Japan, the comparative rates of premiums appear to be higher in Nepal. In effect, the IB's high tariff has contributed to the lack of uptake of insurance products by Nepali homeowners. In addition, the IB's fixed tariff disables the ability of the market to lower the overall disaster risk exposure of Nepali homeowners by influencing their location decisions through prices that better-reflect geographic seismic risk. Given the fixed price, homeowners in locations with lower seismic risk end up subsidizing the homeowners in locations with higher seismic risk. In contrast to life insurance policies, the IB has mandated life insurance companies to have an actuarial valuation each year and to prepare a financial condition report every three years.

High solvency requirement hinders product innovation. The IB has set very high solvency requirements for the existing scenario of insurance industries where the market lacks volume. The Solvency Margin Directive 2071 for General Insurers notes that the "Required Solvency Margin" shall be not less than the highest of the following:

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[382] Swiss Re. (2015). Sigma. World Insurance in 2014: Back to Life. Swiss Re. Retrieved from http://media.swissre.com/documents/ sigma4_2015_en.pdf.

[383] Karki, D. and Khatiwada, S. (2016). Disaster Under-Insurance in Nepal: A Look at Supply Side Constraints in the Insurance Industry in Nepal). Samriddhi Foundation. Retrieved from: http://www.academia.edu/24705347/Disaster_Under-Insurance_in_Nepal_A_look_at_supply_side_constraints_in_the_Insurance_Industry_in_Nepal

[384] Exchange rate used is USD 1 = NPR 100.

- NPR 250 million.
- A sum equivalent to 20 percent of net premium.
- A sum equivalent to 40 percent of the average net outstanding claim for the three years immediately preceding the current year.

Limited scope for reinsurance companies. Reinsurance companies are an integral part of the risk-sharing in the insurance market. In Nepal, however, foreign companies provide reinsurance products and services for most of the insurance companies in Nepal. There is a single reinsurance company in Nepal, Nepal Reinsurance Company (Nepal Re), which also operates with very few companies. This is because the reinsurance market is tightly regulated with prescriptive guidance on reinsurance companies' investment portfolios. There is a provision that the insurer should take prior approval of the IB to invest in sectors other than that specified by the board. In fact, the requirements are so restrictive that only 16.4 percent of the actual investments made by non-life insurers fall under the unregulated category.[385] Currently, the IB is working towards the formulation of the first reinsurance policy for Nepal, which was forwarded to the Ministry of Finance for approval. For now, there is a mandatory provision that the insurance companies operating in Nepal should transfer a minimum of 20 percent risk to Nepal Re.

Absence of provisions for dealing with unlicensed placements of primary business by brokers. The laws, which regulate the insurance businesses, such as the Insurance Act and the Insurance Regulation, lack provisions for dealing with unlicensed placements of primary business by brokers. Given the open border between Nepal and India, insurance risks in Nepal are likely placed with Indian insurers not licensed in the country and that are involved in generating new business for their insurance company sponsors in India. These kinds of practices allow unlicensed foreign competitors to take away from Nepali insurers' business opportunities in the country.

Usage of Insurance Products for Disaster Resilience

The low insurance penetration in Nepal is further substantiated by a report by Samriddhi Foundation, which found that out of the total USD 3.51 billion housing and human settlement losses incurred in the Nepal Earthquake 2015, only USD 83 million damage was covered by insurance (2.4 percent).[386] Some of the reasons for minimal usage of insurance products are explored below:

- **Poor households have low demand to purchase insurance**. Insurance is low priority for 26 percent of the poor Nepali households because it competes with food, shelter, clothing and other necessities.[387] However, the construction sector ranked third (following agriculture and

[385] Karki, D. and Khatiwada, S. (2016). Disaster Under-Insurance in Nepal: A Look at Supply Side Constraints in the Insurance Industry in Nepal). Samriddhi Foundation. Retrieved from http://www.academia.edu/24705347/Disaster_Under-Insurance_in_Nepal_A_look_at_supply_side_constraints_in_the_Insurance_Industry_in_Nepal_.
[386] Ibid.
[387] Asian Development Bank. (2019). The Enabling Environment for Disaster Risk Financing in Nepal: Country Diagnostics Assessment. Manila: Asian Development Bank. Retrieved from https://reliefweb.int/sites/reliefweb.int/files/resources/environment-disaster-risk-financing-nepal.pdf.

wholesale-retail trade) in terms of contribution to post-earthquake economic growth, which offers a good opportunity for the country to develop the insurance sector.

- **Limited range of products.** Insurance companies offer a limited range of products in the market whose prices are administratively fixed by the IB, which raises the likelihood that those products do not meet the Nepali consumers' demand to transfer risk.
- **Government fostering risky practices such as less insurance coverage**. After the 2015 earthquake, the GON largely relied on a financing scheme with provisions for grants and low interest loans, as well as owner contributions, for rebuilding private houses.[388] The public, as rational agents, will draw inference from this experience and may be willing to take more risks with an expectation of similar government assistance in case another disaster occurs. As a result, the public may voluntarily reduce their protection measures such as adopting less disaster-safe construction practices and foregoing any insurance coverage.

4.3.2.2 Financial Policies and Products for Disaster Resilience in Nepal

Development of Financial Products for Disaster Resilience

BFIs offer two types of mortgage financing based on the amount of the loan. BFIs classify mortgage loans of up to NPR 15 million as residential personal home loan. This accounted for 10 percent of BFIs' loan portfolio in the post-earthquake period. Real estate loan captures all the other types of mortgage loan, including those in excess of NPR 15 million, commercial complex and residential apartment complex loan, lending on income generated commercial complex, and land purchase. This accounted for 7 percent of BFIs' loan portfolio.

In Nepal, mortgage financing is a personal loan to the client that, according to the rules of the NRB, ranges from NPR 0.5 million to NPR 15 million.[389] The financial products of BFIs do not consider the quality of the financed physical asset in setting the terms of the loan. The property is assessed by the valuator based on the standard market value and the same would be used to buy the insurance and loan value. There are two types of mortgage loans that, for the ease of understanding, are classified as Type A and Type B in the section below:

***Type A (term loan)*:** Term loan (*dhito sakaera dine loan* - in Nepali) is a practice of granting loans to clients based on their collateral (land and building). The client may apply for such loans to build another house, for business purposes, or for personal contingencies. For such loans, the banks measure their risks based on two criteria:

- Is the value of the clients' collaterals enough to recover the debt in case they default?
- Is the cash flow of the client adequate to repay the principal and service the interest of the loan?

However, to acquire this loan, banks have made it mandatory that the collaterals be insured. In such cases, the bank's valuator assesses the value of the building and based on the value, the client needs to

[388] National Planning Commission (2015). Post Disaster Needs Assessment: Nepal Earthquake 2015. National Planning Commission, Government of Nepal. Retrieved from https://www.npc.gov.np/images/category/PDNA_volume_BFinalVersion.pdf
[389] Equivalent to USD 4390 to USD 131688 at an exchange rate of USD 1= NPR113.91.

purchase an insurance policy of their building. If the client already has property insurance coverage that is lower than the required value as assessed in the bank's valuation, they have to top it up to make it on par with the bank's valuation amount. Nevertheless, if the value of the land is enough to cover the loan amount of the client, then in such cases, the requirement to obtain the insurance policy of the building can be waived. The client also must present the project completion certificate from the Land Revenue Office.

Type B (Home loan): Banks provide home loans in two forms: a) financing to purchase land, and b) financing to build a house. BFIs do not require any insurance policy for loans to purchase land. However, BFIs require an insurance coverage for the full value of the building, for loans to build a house. In fact, it is reported that BFIs include as standard clause in most home loan contracts that the mortgaged house should be insured against natural calamities, including earthquakes. If borrowers fail to insure their property, the bank debits the premium to the loan account of the borrower and pays for the premium. In addition, BFIs still commonly practice requiring fixed assets (e.g., land and buildings) as collateral for this type of loans. Some banks require a 50 percent minimum equity contribution. In this case, the insurance coverage of the subject building becomes a redundant security of the loan. As a result, BFIs lack any incentive to structure the terms of their loan in a manner that would encourage borrowers to adopt disaster-safe construction practices. On insurance, since the insurance coverage is mandated by BFIs and that the price of insurance is administratively fixed by the IB, insurance companies lack any incentive and flexibility to price their products, such as providing discounts based on earthquake resistance capacity, to encourage homeowners to adopt disaster-safe construction practices. For both forms of Type B loans, the mandatory requirement of purchasing insurance policies to place an application for a loan has triggered the uptake of property insurance in Nepal.

4.3.3 Enhancing Private Sector's Reach to Vulnerable Communities

Vulnerable communities are at the lowest level of preparedness when it comes to disaster resilience, mainly as a result of their lack of knowledge and awareness of the hazards and the proportionately larger negative impact those hazards have on those communities. Since the definition and criteria of being vulnerable varies under different circumstances, the community-based partnership approach is one of the best approaches to mitigate the challenges faced by vulnerable communities in the event of disasters. It corrects the defects of the top-down approach in development planning and disaster management, which fail to address local needs, ignore the potential of indigenous resources and capacities, and may even increase people's vulnerabilities. To mitigate the vulnerabilities, the private sector can work with the local governments or communities on:

- Establishing structural measures, such as engineering works (bridges, protective dikes, embankments, and safe building design).
- Implementing non-structural interventions, such as community risk assessments; community risk reduction planning; public awareness campaigns; food security programs; group savings; cooperatives; promoting disaster insurance schemes; strengthening community disaster management organizations; and advocating on disasters and development issues, legislation, and land-use zoning.

4.4 CONCLUSIONS AND RECCOMENDATIONS

Nepal continuously faces disaster impacts of high magnitude and intensity from a multitude of natural hazards and must therefore seize every opportunity to improve the quality of infrastructure, one of which presented itself in the current reconstruction activities for damaged infrastructure from the 2015 earthquake. This sub-study within the PSE assessment focuses on promoting disaster-safe infrastructure and enhancing resilience towards the loss of physical and financial capital by engaging the private sector through market-based solutions to improve the performance of the construction supply chain.

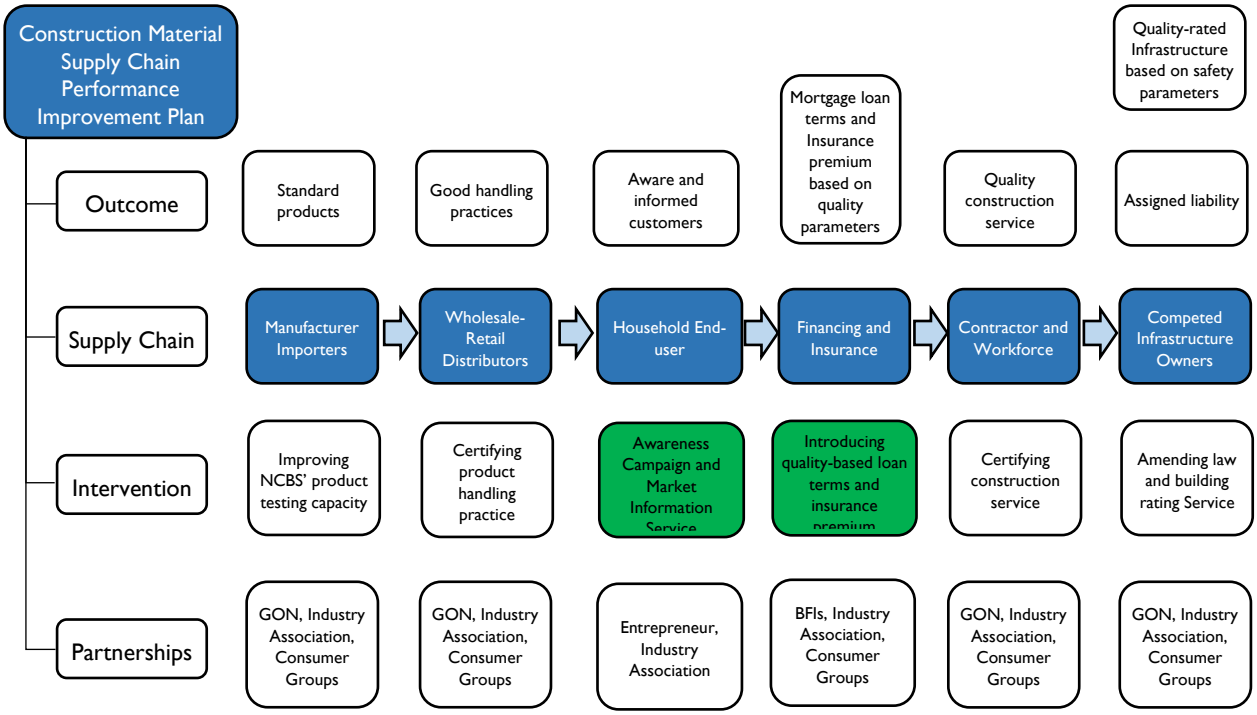
In Nepal, the lack of consumer awareness, severe information asymmetries biased against consumers, limited oversight capacity of the GON, weak liability laws, and poor contract enforcement have created market inefficiencies. These inefficiencies result in the construction supply chain failing to correct the poor quality of materials supplied in the market as well as the non-standardized pricing practices of manufacturers and distributors.

Thus, Nepal needs a multifaceted approach to strategically introduce interventions at various stages of the supply chain in order to establish a consistent incentive structure that would allow market agents to improve the performance of the supply chain in an organic and systemic manner. Figure 32 lists the mutually reinforcing interventions at strategic stages of the supply chain to trigger the transformation of the construction material supply chain. The underlying principle undergirding all these recommendations is to empower Nepali customers with market information that will enable them to differentiate competing market providers and exercise their purchase decision in such a manner as to influence the conduct of those providers, which will ultimately improve the performance of the entire construction supply chain in an organic and systemic manner

Strengthen NBSM's product testing and certification capacity: The GON must strengthen the NBSM's capacity to test construction materials and to certify that they meet quality standards in order to ensure that only quality construction materials enter the supply chain.

Improve wholesale and retail distributors' product handling practices: Poor product handling practices degrade the quality of construction materials as they move through the supply chain up to the point of last sale. Improving such practices will require distributors to invest in adequate warehousing facilities and transport equipment, as well as adopt a better inventory management system. Since distributors will incur additional costs to implement all these, they will have no incentive to change if the market does not penalize them for poor product handling practices that result in degrading product quality. One approach to connect product handling practices with the distributors' revenue stream is to certify those that practice good product handling practices. This will allow the market to differentiate distributors based on product handling practices, enabling customers to penalize poor practices and reward good practices. An inspection and certification service can be jointly designed and implemented by the GON (NBSM), the industry association, and consumer advocacy groups.

Figure 32. Multi-faceted Set of Mutually Re-enforcing Interventions to Improve the Performance of the Construction Supply Chain



Source: Internal Analysis

Strengthen the market information system: The severe asymmetry in market information that is biased against customers, disables the ability of consumers to exercise their purchase decisions in such a manner that would influence the product quality, pricing, and handling practices of manufacturers, importers and wholesale and retail distributors. Hence, creating a platform that informs consumers on the products carried by wholesale and retail distributors, such as product production batch, manufacturing date, quality seal, and prices, as well as the product handling practices of those distributors, will empower customers to exercise their purchase decisions that will influence agents in the supply chain to provide quality construction materials in the market at standardized prices. An entrepreneur could develop this platform and provide a market information service that is supported by a revenue model, through user fees or advertisements, which can pay for the development of the system, the regular updates of its contents, and at the same time guarantee a remunerative return on investment.

Create financial incentives to build a strong demand for disaster-safe and resilient infrastructure including mortgage financing and insurance premiums based on infrastructure quality as well as tax incentives: A construction material supply chain that provides quality products in the market at a standardized price will only develop if customers express in the

market a strong effective demand for disaster-safe and resilient infrastructure. Such demand may naturally come from customers who are aware of the risks associated with disasters, have certain risk aversion level, and have the purchasing power to protect themselves through disaster-safe infrastructure. Demand may also come from customers who want to comply with building regulations. The rest of the demand will have to be created through financial incentives to adopt disaster-safe construction practices. For the last type of demand, the study highlights three potential interventions to create financial incentives and the challenges associated with each of them.

1. ***Mortgage financing based on quality of infrastructure***: This sub-study estimated that BFIs finance around a quarter of new construction in Nepal, giving BFIs a rich opportunity to structure their mortgage loans – equity requirement, interest rate, maturity, and repayment schedule – in a manner that would incentivize borrowers to adopt disaster-safe construction practices. However, NRB's current collateral policy and BFIs' practices provide redundant security coverage, such that incentivizing disaster-safe infrastructure on the financed property does not provide any additional security on the BFIs' loan portfolio. As a result, BFIs have not changed their mortgage loans terms to protect their financial interest.

For change to occur, two critical factors need to be considered:

- The collateral policy of NRB needs to be evaluated to create a strong link between the terms of mortgage loans with the quality of infrastructure being financed.
- The need for mechanisms that can ensure the disaster-safe construction practices are adopted throughout the construction process. The GON can strengthen the existing quality control inspection before, during, and after the construction process. For example, the current practice of inspection by in-house engineers at various phases of construction must be complemented with inspections by external engineers that conduct unscheduled or risk-based inspections. Furthermore, the current practice of final inspection done by government agencies must be complemented with final inspection conducted by an external engineer. In addition, the role of inspectors must include auditing of the quality of infrastructure based on the approved building design, the quality of construction materials used, and the quality of workmanship.

  Development partners could facilitate the discussions between the major stakeholders involved in this process, which would be the NRB, Ministry of Finance, appropriate GON Offices, and BFIs, in order to facilitate the change in collateral policy and to establish the inspection mechanism.

2. ***Insurance premiums based on quality of infrastructure***: The insurance industry could provide another market-based instrument to incentivize homeowners and business establishments to adopt disaster-safe construction practices. However, a poor enabling environment has impeded the development of the insurance sector. BFIs' requirement for insurance coverage on mortgage loans has driven the recent uptake of insurance coverage against natural disasters such as floods and earthquakes.

The BFIs' mandated requirement for insurance coverage and the IB's administratively fixed insurance premium above actuarially fair rates have resulted in the insurance companies' lack of any financial incentive and the flexibility to consider building quality factors such as seismic resistance capacity, in pricing their products. As a result, insurance companies fail to provide financial incentives to encourage homeowners and business establishments to adopt disaster-safe construction practices. If the GON policies allowed insurance companies to compete in the market by setting the prices of their insurance products, these prices will be based on the quality of infrastructure being insured. The client would then be incentivized to use good quality of construction materials and certified workforce, thus creating a demand for quality materials and certified providers. The agency that could facilitate the certification of such houses could be the Land Revenue Office that provides project completion certificates or the local government engineers whose role currently is limited to the approval of buildings' designs. Development partners could help convene discussions among stakeholders to bring attention to and build support around this approach, as well as determine the best government-level agency to undertake the role. They could also help facilitate the transition by introducing best global practices of actuarial studies to the insurance companies.

3. ***Incentives in the form of tax breaks***: One of the mechanisms to increase the uptake of insurance is creating financial incentives around the uptake of insurance products. For this, the government could adopt a policy, wherein it will subsidize the property tax by a certain rate, if the infrastructure is insured with conditions that the owner adopts disaster-safe construction practices. For illustrative purposes, incentives around property tax can be linked to insurance uptake in the following examples:

- The government provides tax deduction incentives on income tax for individuals for take-up of personal life insurance, up to a premium of NPR 25,000. A similar scheme can be offered for uptake of property insurance and can be executed by local governments as the property tax currently lies in their jurisdiction.
- For instance, the government can provide a tax deduction of 20 percent or NPR 10,000, whichever is lower, on property tax for households if they obtain property insurance.
- Households would be required to fulfill obtain all the approvals (e.g., design, project completion certificate, and proposed use of the building) and proof of compliance with design codes and standard materials in order to obtain the tax benefits.

Hence, the benefits of this mechanism will be multi-layered. For the government, rather than bearing a huge post-disaster cost, this provides a better mechanism for disaster preparedness and resilience. For households, the money they save from reduced taxes will cover insurance premium and through insurance coverage, their financial risk is minimized. For insurance companies, a significant market would be created, and they would be incentivized to introduce a suite of insurance products that are suitable for customers with different risk profiles. In addition, the requirement of complying with building codes would mean that more resilient buildings would be constructed, thus creating a demand for quality

material, designs, and better contractors. Donors and development partners can play an important role in helping the central government create a holistic strategy around these mechanisms and help in the implementation by strengthening the execution capacity of the local governments.

Other benefits

- There are opportunities for banks and financial institutes to provide incentive for the mortgage borrowers based on the risk assessment.
- Insurance companies could provide better premium for the houses that meet the certifications etc.
- There can be a lot of cascading effects that the market will bring.

Amend enabling law to locate the liability for structural flaws: Since Nepal's current enabling law does not assign the liability against structural flaws, no one in the construction ecosystem guarantees that every factor that contributes toward a disaster-safe infrastructure, such as an acceptable design, quality construction materials, and competent workforce, were used in a given construction project. The international best practice, as exemplified by Hong Kong, is to hold the architect or engineer, professionals in charge of the supervision, and construction company liable for any structural flaws in completed construction projects. Worldwide evidence shows that once liability is assigned, obtaining insurance coverage against such liability is commonly practiced, even if not mandated by law.

Certify contractors and construction workers: An important factor that complements a good building design and quality construction material to build disaster-safe infrastructure is the quality of services provided by contractors and the construction workers. The contribution of quality construction materials to disaster-safe infrastructure can be wasted if contractors and construction workers provide poor construction services. To allow the market to discipline the conduct of contractors and construction workers, customers must be able to differentiate between good and poor construction service providers through a client-based performance certification mechanism that can be based on factors, such as performance rating by past clients and building ratings, as well as structural flaws or problems of completed construction projects. Development of a certification program will connect service providers' quality of service and revenue stream, allowing the market to reward good service and penalize poor service, thereby incentivizing good service performance.

Rate quality of completed infrastructure: Homeowners and business establishments generate income from completed infrastructure, such as leasing the property (e.g., apartments), using the property for business (e.g., homestays and restaurants), and selling the property for profit. An infrastructure quality rating system can be developed to reflect disaster safety rating based on factors such as building design, quality of construction materials used, and the certification level of contractors and workers, as well as building seismic resistance capacity. This disaster safety rating will connect the quality of the infrastructure and the ability of owners to generate a revenue stream from such property, allowing the market to reward quality infrastructure and penalize poor quality infrastructure, thereby incentivizing owners to demand for quality infrastructure.

Combined, these recommended interventions would establish a coherent and consistent incentive structure that would start with the creation of a demand for disaster-safe infrastructure and the

cascading derived demand for robust building design, good quality construction materials, and competent workforce. At the same time, this incentive structure would incentivize the construction material supply chain to develop in an organic and systemic manner and provide quality construction materials at standardized prices. As a result, all Nepali households and business establishments would have access to quality construction materials, which would contribute toward building disaster-safe and resilient infrastructure in Nepal.

5.0 HEALTH: PHARMACEUTICAL SUPPLY CHAIN THAT DELIVERS EFFICACIOUS MEDICINES FOR A HEALTHY POPULATION

5.1 INTRODUCTION

Nepal made considerable progress in improving the health status and raising the average life expectancy of its citizens.[390] Government spending on health, as a share of GDP, slowly increased from 1.4 percent in FY 2014/15 to 1.9 percent in FY 2017/18. Comparing to some other South Asian countries, the increase in Pakistan was 0.7 percent in 2014/15 to 1.1 percent in 2017/18, and in Sri Lanka it was 3.6 percent in 2014/15 to 3.9 percent in 2016/17.[391,392,393] In terms of the private sector growth, nearly 3,000 small-, medium-, and large-sized commercial firms are currently operating in the Nepali market, and foreign investments of USD 18.34 million were realized since 2009.[394] This increase, however, is marginal compared to the rising health services demand resulting from several factors such as a) an aging population,[395] b) an increased life expectancy of Nepalis, and c) higher disposable income from remittances.

Insufficient investment in the health care system (inputs in health facilities and financial products for health care) is reflected in weak health infrastructure, lack of skilled physicians, and poor availability and distribution of life-saving vaccines and pharmaceuticals.[396] On average, Nepal has 0.2 hospital beds per 1,000 people[397] and 0.651 physicians per 1,000 people.[398] Moreover, the entire sector is import-reliant (in terms of raw materials, semi-processed goods, packaging materials, technology, as well as processed medicines and supplies) to a high degree, which increases the cost of healthcare for the end-consumer. According to a 2014 Dolma Development Fund report, 18 percent of Nepalis self-reported that their

390 World Health Organization. (2018). WHO Country Cooperation Strategy at a Glance: Nepal. World Health Organization. Retrieved from: https://apps.who.int/iris/handle/10665/136955.
391 Knoema, Sri Lanka - Total health expenditure as a share of GDP, Knoema, 2019.
392 Ministry of Finance, "Pakistan Economic Survey 2017-18," Government of Pakistan, Islamabad, 2018.
393 FMoHP and NHSSP, "Budget Analysis of Ministry of Health and Population FY 2018/19," Government of Nepal, 2018.
394 Investment Board Nepal. (2018). Health Sector Overview. Kathmandu: Investment Board Nepal.
395 The proportion of elderly people in Nepal in was 6.8 percent in 1995/96, compared to 9.1 percentage in 2010/11. By 2019, there are more than 2 million people over the age of 60 living in Nepal, which comprises 9 percent of the country's population.
396 Dolma Development Fund (2014). A Report on Market Data for Private Sector Investments in Nepal Healthcare Sector. Kathmandu: Dolma Development Fund
397 World Bank data for 2012.
398 World Bank data for 2017.

healthcare[399] was "inadequate," while 79 percent reported it was "just adequate." These metrics are worse in the rural areas of the mid- and far-western Hills where up to 35 percent of households reported their healthcare as "inadequate." As a result of these perceptions, 63 percent of people in Nepal generally prefer to visit private healthcare practitioners and facilities.

This preference, combined with an increased spending capacity, is reflected in Nepalis' increased out of pocket expenditures (OPP) in healthcare. The OPP amounted to 55.4 percent of all the current health expenditure (CHE), making it the main revenue and funding source of the Nepali health system in 2015/16. Moreover, 63.4 percent of the OPPs were for pharmaceuticals[400] and medical goods, and almost two-thirds of spending were made at the pharmaceutical, making the pharmaceutical industry the largest recipient of current health spending in Nepal. Hence, this study will focus on analyzing the pharmaceutical market and health services associated with its delivery (specifically the prescribing of standard drugs) to improve access to good quality health products and services. In the given context, the following two research questions were addressed through the study:

- What factors impede investments in the health sector supply chain that created gaps in providing standard drugs and quality health services in the market, at the right quantity, place, time, and price? Does GON investment in health services crowd-out private sector investment?
- What hinders the development and widespread use of financial and insurance products that improve access to good quality health products and services?

5.2 METHODOLOGY AND LIMITATIONS

The research questions were addressed by using the Structure Conduct Performance (SCP) framework. The SCP framework is considered the pillar of the industrial organization theory and is powerful in analyzing the performance of markets and industries. The framework asserts that market performance is caused by the conduct of players in the market, such as product and pricing practices. This conduct is, in turn, caused by the structure of the market including the number and size of enterprises, policy regimes that determine entry and exit of enterprises, and market information, among others. Nevertheless, the relationship between structure, conduct and performance is not necessarily unidirectional; they can flow in the opposite direction, too.

The study applied the SCP framework to identify market gaps in the supply of standard pharmaceutical products, as well as the appropriate interventions required to address those gaps. The study aimed to identify interventions that would allow agents to improve the performance of the supply chain in an organic and systemic manner. The study adopted a combination of primary and secondary research, field visits, consultative meetings, and key informant interviews to gather data and information for the analysis.

[399] Health care here refers to healthcare-infrastructure and healthcare facilities in totality.
[400] The words "medicines" and "drugs" are used interchangeably in this study.

As discussed above, the health sector spans too wide of a range of health facilities and services to cover briefly in this report. Furthermore, there are complex issues of federalism and health governance that are critical to increasing and improving service delivery throughout Nepal that fall outside of the objectives of this exercise. Hence, based on the scope and with the agreement of the Mission, this study aims to explore the research questions through two lenses: a) the supply chain of pharmaceutical products, particularly essential drugs, and b) the development and widespread use of financial and insurance products. The demarcation of the scope could be viewed as a limitation of the study.

5.3 FINDINGS

5.3.1 The Supply Chain of Standard Drugs and Related Actors

Department of Drug Administration: The Department of Drug Administration (DDA) regulates and monitors the production, sale, distribution, and use of pharmaceuticals, under the Drugs Act 2035.[401] DDA is responsible for preparing the official Nepal Pharmacopeia and an encyclopedia related to it that governs the standards of drugs available in the market, as well as classifies the drugs into categories and sub-categories.

Stakeholders Involved in the Delivery of Standard Drugs via the Private Sector: The supply chain primarily includes: a) importers of Active Pharmaceutical Ingredients (API), finished products, medical equipment, and medical supplies (123 importers), and b) domestic manufacturers that produce drugs locally using imported APIs,[402] both of which supply final products to wholesalers (78 local manufacturers). There are two types of wholesalers:[403] super-stockists and stockists (1,921 wholesalers). The former distributes products and supplies to the latter. Retailers or pharmacies[404] are at the end of the supply chain, receiving the products and supplies from wholesalers and dispensing them to the end consumers (8,642 retailers). All of these stakeholders are registered at the DDA. The heavy presence of the private sector at these stages suggests the GON investment in health services has not significantly crowded-out private sector investment.

Stakeholders Involved in the Delivery of Standard Drugs via the Public Sector: The Logistics Management Division in the Department of Health Services is the central unit for procurement and nationwide distribution of drugs and medical supplies, whereas the subnational governments (SNGs) procure and distribute drugs in areas under their jurisdiction. The importers, domestic manufacturers, and wholesalers bid for supplying drugs to these agencies through the public procurement system. (Further details on this process are presented in Appendix 25). The government agencies then dispatch

[401] Ranjit, E. (2016). Pharmacy Practice in Nepal. The Canadian Journal of Hospital Pharmacy, 69(6), 493-500. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5242283/.
[402] As per the data retrieved from DDA's website, the total count of importers and domestic manufacturers was 123 and 78 respectively until October 2018.
[403] As per the data retrieved from DDA's website, until mid-July 2019, 3,351 wholesalers, redistributed products, and supplies to retailers across the nation.
[404] As per the data retrieved from DDA's website, the total count of retailers was 20,232 until mid-July 2019 across Nepal.

the procured drugs to the Regional Medical Stores (RMS) that ultimately distribute the drugs to government-led health units: government hospitals, primary health care centers, health posts, and sub-health posts in the districts of their respective jurisdiction. The government hospitals can further procure drugs based on their consumption rate. Finally, all of these drugs are dispensed to consumers through government-led pharmacies or private pharmacies.

Donors: The Guidelines for Drug Donations to Nepal prescribes that donors can only donate drugs listed under the National List of Essential Drugs-Nepal, unless otherwise specifically requested by the Ministry of Health and Population (MoHP). Drugs that comply with quality standards, in both the donor country and Nepal, are distributed either through the donor's specific outlets or through the government.

Prescribers and Dispensers: Drugs are prescribed consumer goods that can only be dispensed to the consumer via prescription, which is an instruction written by a medical practitioner authorizing a patient to be issued a specified drug or treatment. In Nepal, as per the Drug Category Rules 1986, among the three categories of drugs, Categories "A" and "B" can be sold only with a doctor's prescription,[405] while any pharmacist may sell category "C" based on experience and without the prescription of a doctor. Hence, the prescribers (doctors) and the dispensers (pharmacists) exert a strong influence on the type of products consumers purchase.

5.3.2 Factors Creating Gaps in the Supply Chain of Standard Drugs

5.3.2.1 The Pricing Policy of Drugs

To date, there is no codified method of fixing the maximum retail prices (MRP) based on the cost of production for domestic manufacturers. As such, the price of Nepali drugs is based on the existing market rates of imported drugs. The price of imported drugs in Nepal should not be higher than the cost of the drug in its country of origin, irrespective of the country. For instance, in the case of drugs and supplies imported from India, the product packaging includes the MRP in Indian rupees, which is multiplied by 1.6 to convert to Nepali currency, which is used as the maximum retail price in Nepal. The importers, in such cases, are equivalent to dealers for foreign manufacturers. Hence, their costs (cost incurred in transportation, customs, handling, etc.) and benefits (credits and cash discounts) are adjusted as per the manufacturers' guidelines for the dealers or the dealers' price. Two pricing rules apply to both Nepali and imported drugs:

- Any changes to prices by the manufacturer/importer first need to be approved by the DDA. The DDA permits the manufacturer/importer to increase their rates by a maximum of 10 percent each year.

[405] As per the Drug Category Rules 1986, category "A" drugs consist of narcotic and poisonous drugs, while category "B" consist of antibiotics, hormones, etc.

- The billing amount from one stakeholder to another cannot exceed more than 20 percent. The Black-marketing Act 2032 governs this. It does not mean that the profit margin will be limited to 20 percent of the actual cost price to the final selling price for consumers. With every billing done from one stakeholder to the other in the chain of product distribution, the stakeholder can top up his cost price by profit margin not exceeding 20 percent.

Thus, in the absence of establishing maximum retail prices (MRPs) based on the domestic cost of production, the manufacturers and importers rely on foreign prices on which to base the price of their products, creating considerable price variation between brands. For example, several studies demonstrated an ambiguity in the price of various brands of drugs available in the market. A study revealed that out of 89 different formulations, variations between the maximum and minimum priced brands of more than 100 percent were observed in 37 formulations and more than 200 percent in 22 formulations. Thirty-seven formulations had more than 100 percent inter-pharmacy variation.[406] Furthermore, a wide variation of up to 3,406 percent was observed in the price of drugs used for the management of cardiovascular diseases.[407] The ability of providers to charge different prices indicate that manufacturers and importers have succeeded in differentiating their products in the market. However, given that manufacturers handle mostly generic products, such differentiation and resulting price variations suggest inefficiencies in the market, the cost of which is borne by the consumers.

5.3.2.2 Government's Price Control Policy

In Nepal, Clause 26 of the Drug Act states that, if necessary, the government and the DDA can regulate the price of any drug.[408] Under this provision, the DDA has fixed the MRPs for 96 drugs, which include a range of 18 commonly used drugs and 78 drugs used to treat non-communicable diseases until 2019. These rates apply to both domestically produced drugs and imported drugs.

Method of fixing the MRPs of price-controlled drugs: The prices of these 96 drugs were fixed by studying the prices of these drugs available in the market. The DDA collected the prices of brands with the highest share in the market and then calculated the median prices of the drugs that were used to fix the ceiling of MRPs for those drugs. Hence, currently, manufacturing companies label the MRPs of these drugs as per the prices fixed by the DDA; however, depending upon the nature of the relationship with the customer, the pharmacies can provide discounts on the labeled MRP for these drugs.

[406] Devkota, A., Paudel, A., Koirala, B., Baral, D., Gautam, S., & Sharma, S. K. (2018). Price Variation and Availability of Free Medicine for Non-communicable Diseases. Journal of Nepal Health Research Council, 16(39), 118-123. Retrieved from https://www.researchgate.net/publication/326212853_Variation_in_Price_of_Medicines_and_Free_Medicine_Availability_for_Treatment_of_Non-communicable_Diseases_in_Public_Sector_of_Eastern_Nepal.
[407] Roy, N. (2004). Who rules the great Indian drug bazaar? Indian Journal of Medical Ethics, 1(1), 2-3. Retrieved from https://www.researchgate.net/publication/7401007_Who_rules_the_great_Indian_drug_bazaar.
[408] Government of Nepal. (1978). Drugs Act 2035. Kathmandu: Nepal Law Commission. Retrieved from http://www.lawcommission.gov.np/en/archives/category/documents/prevailing-law/statutes-acts/drugs-act-2035-1978.

Box Story 8: Impact of Government's Price Control Policy on Investment

Delving into price control policies, there is a mechanism in the Nepali pharmaceutical sector that mandates that drugs cannot be re-imported into Nepal, meaning they can only be imported from the country of origin. Due to this restrictive policy, when importing from other countries, except India, the landing cost in Nepal increases. Furthermore, the documentation, procurement, and delivery process results in the late delivery of the drugs. As such, Nepali pharmaceutical companies are compelled to import those products illegally from India, thus negatively affecting Nepal's investment scenario. For example, there is a dire need for inhalers in Nepal. However, the government's price control policies and provisions regarding imports from the country of origin make it too costly for potential investors to invest in this sector. As such, inhalers are not readily available in Nepal, since they are not being imported, nor are they being produced locally.

In another scenario, Nepal imports dextrose from India to manufacture Oral Rehydration Solution (ORS), whose price is fixed at NPR 10. Recently, the price of dextrose increased in India, leading to higher production costs in Nepal. However, since the price is fixed for ORS, domestic manufacturers stopped producing ORS and very few importers are currently importing ORS. Consequently, ORS is being substituted with other drugs or products with similar action.

When a manufacturer/importer registers a new product, the company collects information on the prices of existing, similar drugs in the market and justifies the prices to the DDA. Based on this, the DDA then allows the importer to sell the products at the suggested price. The MRP is based on the cost of production of India, which the DDA accepts as the cost of production in Nepal being used as the basis for pricing. According to the DDA officials, these prices are fixed to increase access to health services and products, as well as to respond to complaints regarding the arbitrary increase in drug prices.

However, none of these efforts have brought the price variation within a tolerable limit for consumers.[409] Despite the numerous price control policies and price-determining mechanisms in the pharmaceutical industry, end-users find it difficult to know the reasonable price of a drug. The proliferation of brands for the same drugs makes the dissemination for price and quality information challenging in Nepal's pharmaceutical market.

5.3.2.3 Incentive Structures within the Supply Chain

The supply chain actors of the Nepali pharmaceutical market have different tiers of expected profit margins in the sales of drugs and medical supplies. For example, based on widely used industry practice, the profit margin for wholesalers ranges from 8 to 10 percent of sales, while retailers get 16 percent. Above these thresholds, manufacturer/importer may provide additional incentives/bonuses/discounts to the wholesalers and retailers, to push their products strongly through the market. However,

[409] Subedi, M. (2009). Trade in Health Service: Unfair Competition of Pharmaceutical Products in Nepal. Dhaulagiri Journal of Sociology and Anthropology, 3, 123-142. Retrieved from https://www.nepjol.info/index.php/DSAJ/article/view/2783.

manufacturers and importers consider the bonuses and misused samples as part of cost and add them to the price of drugs, such that the final consumers still end-up paying for those promotional expenses.

5.3.2.4 Risk-averse Nature of Domestic Manufacturers

The Nepali pharmaceutical market includes multiple types of drugs – patented, generic, and branded generic. While imported drugs can be any of the three types, most of the Nepali manufacturers largely stick to producing generic drugs and very similar "me-too" products.[410] The global drug industry got criticized for increasing investment and focus on developing new drugs that have similar mechanisms of action of already existing drugs.[411, 412, 413] Others have defended these "me-too" drugs, arguing that they provide more therapeutic options and enhance competition.[414,415] Overall, while producing drugs that have a similar mechanism of action enhances competition, it also restricts innovation and diversification of products. Thus, for the domestic manufacturers, the actual competitors are the foreign manufacturers that sell generic drugs in Nepal, rather than those that sell patented drugs in Nepal.

In Nepal, the range and scope of products are narrow, given that Nepali pharmaceuticals only produce generic drugs. However, the firms differentiate their products based on the "first movers' advantage" rather than innovation. Nepali manufacturers introduce the generic version of the drug into the market as soon as the patent of an international drug expires, and the firm that can do so in the first place has the "first movers' advantage." While there are some risks associated with being a first mover, the benefits often outweigh the risks and can lead to a profitable and sustainable competitive advantage and market position. Once the product is established in the market, other latecomers cannot compete with the brand value of the drug, and, thus, try differentiating other products from the pioneer's product. Moreover, it is said that manufacturers apply delay tactics and create approval challenges for other new entrants at the DDA to acquire an adequate market share and profit from the first movers' advantage.

5.3.2.5 Super-normal profits

Profits to enterprises in a value chain and access of consumers to products and services are opposing outcomes of a market. More of one means less of the other. Hence, the study examined the profitability of enterprises in the pharmaceutical value chain as one element of market performance. Ideally, markets allow only normal profits, as competition drives prices to approach the long-run average cost, in which case there should also be a limited incentive for new firms to enter the market.
Nepal does not have the data to conduct the above-market performance assessment on profitability. Based on common industry practice, however, Table 18 calculates the profit margin across the

[410] "Me-too" drugs are products that largely duplicate the action of existing drugs.
[411] Angell, M. (2005). The Truth About the Drug Companies. New York: Random House Trade Paperbacks.
[412] Avorn, J. (2004). Powerful Medicines: The Benefits, Risks and Costs of Prescription Drugs. New York: Alfred A. Knopf.
[413] Goozner, M. (2004). The $800m pill: The Truth Behind the Cost of New Drugs. Berkeley: University of California Press
[414] Calfee, J. E. (2000). Prices, Markets and the Pharmaceutical Revolution. Washington DC: American Enterprise Institute for Public Policy Research.
[415] DiMasi JA, P. C. (2004). The Economics of Follow-on Drug Research and Development: Trends in Entry Rates and the Timing of Development. Pharmacoeconomics, 22(2), 1-14. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/15660473

pharmaceutical supply chain in Nepal. Pharmacies earn the highest annual gross profit margin of 64 percent of sales, followed by importers at 49 percent, stockists at 40 percent, and manufacturers at 35 percent. These profit rates appear excessive given Nepal's cost of capital of only 12 percent. However, the study needs additional data or assumptions on the net annual profit margin and sales to asset turnover ratio to confirm that determination. Based on industry data, the study assumes that the gross annual profit margin for pharmacies of 64 percent translates to a 38 percent net annual profit margin. Using this conservative assumption, pharmacies must have a sales-to-asset turnover ratio of 0.31 (i.e., sales revenue is only one-third of assets) for its rate of return to exceed the cost of capital. Given the low investment on physical assets among pharmacies in Nepal, it is highly likely that their turnover ratio may exceed the 0.31 threshold, suggesting that pharmacies earn excessive profits. The proliferation of pharmacies in the market and continuing entry of new ones provide some supporting market evidence, as they are attracted by the excessive profits of existing pharmacies in the market. This result suggests that consumers' access to pharmaceutical products may have been adversely limited by unreasonably high prices that sustain such excessive profits.

Table 18: Net Returns of Different Stakeholders in the Pharmaceutical Supply Chain[416]

Stakeholder	Working Capital cycle	Gross Profit Margin	Inventory Turnover in a Year	Gross Annual Profit Margin	Bank Lending Rate	Net Returns (%)
Manufacturer	30-50 days	4-5%	7	35%	12%	23%
Importer	30-50 days	6-7%	7	49%	12%	37%
Stockists	60-90 days	Minimum 10%	4	40%	12%	28%
Retailer-Pharmacies	60 – 90 days	Minimum 16%	4	64%	12%	52%

5.3.2.6 Unethical Prescribing and Dispensing of Drugs

As many products from various manufacturers have similar features, the easiest way to promote a drug on the market is by using persuasive action that targets prescribers and/or drug retailers. The market is rife with drug substitutions, and the issue with bonuses directly impinges on this practice. The pharmaceutical practice of substituting drugs is rampant for drugs that come with huge bonuses. For instance, a study showed that there is a significant relationship between "influence of detailing/gift/monetary incentives/trip and tours on prescribing pattern" and "rational prescription of antibiotics." This also led to the practice of unethical promotion of specific pharmaceuticals within the

[416] These calculations are for illustrative purposes only, extrapolated based on qualitative interviews.

market.[417] Lucrative offers to the prescriber may insist on prescriptions, and the retailer may encourage prescription substitutions and dispense without prescription.

In Nepal, consumers usually purchase drugs from pharmacies without a prescription. Such non-prescription use of drugs is associated with the risk of inappropriate drug use, defined as patients not receiving the appropriate drugs in doses that meet their individual requirements, for the adequate duration, and at the lowest cost.[418] In addition, many physicians and other healthcare providers lack accurate information on the prices of drugs.[419] A study on 161 community pharmacies showed that 66.5 percent of them dispensed antibiotics without prescriptions, and almost all of the staff involved in dispensing were non-pharmacists (91.4 percent). Furthermore, the same study revealed common practices of replacing one brand of antibiotic with other brands (66 percent), dispensing incomplete courses of antibiotics (73 percent), and not giving any advice regarding antibiotic use (39 percent) or completion of a full course of therapy (80 percent).[420]

5.3.2.7 Weak Market Monitoring

The regulatory agency needs to have a strong capacity to maintain quality assurance mechanisms in the market. However, given the limited resources and staff within the DDA, it is an arduous task for the DDA, alone, to monitor the compliance on quality assurance mechanisms, as well as keep track of the quality of products available in the market. DDA is the main responsible body for quality control, but it has its own limitations. Inadequate and incompetent human resources, lack of support from other stakeholders, and lack of commitment of the people who are responsible for the various activities are some of the limiting factors of the DDA.[421]

Hence, there were instances of reports on the prevalence of substandard drugs in the Nepali market. For instance, another study showed that out of 40 drugs sampled, 90 percent did not comply with the existing regulatory labeling requirements, 42.5 percent of brands did not mention the pharmacopeia standard, and there was no uniformity in mentioning the shelf life/expiration date.[422] Laboratory analysis

[417] Napit, P. R. (2016). Promotional Efforts of Pharmaceutical Industries on Prescribing Pattern of Antibiotics among Medical Doctors in Nepal. Journal of Business and Social Sciences Research, 1(2), 201-214. Retrieved from https://pdfs.semanticscholar.org/3012/e683aa34c409e15f510598db0bbaac2a36ae.pdf.
[418] Nepal, A., Hendrie, D., Robinson, S., & Selvey, L. A. (2019). Survey of the Pattern of Antibiotic Dispensing in Private Pharmacies in Nepal. BMJ Open, 9. Retrieved from https://bmjopen.bmj.com/content/9/10/e032422.
[419] Shankar, P. R., Subish, P., Mishra, P., & M., L. (2006). Ambiguous Pricing of Nepalese Medicines. Journal of the Institute of Medicine, 35-38.
[420] Ansari, M. (2017). Evaluation of Community Pharmacies Regarding Dispensing Practices of Antibiotics in Two Districts of Central Nepal. PLoS One, 1-9. Retrieved from https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0183907&type=printable.
[421] Subedi, M. (2009). Trade in Health Service: Unfair Competition of Pharmaceutical Products in Nepal. Dhaulagiri Journal of Sociology and Anthropology, 3, 123-142. Retrieved from https://www.nepjol.info/index.php/DSAJ/article/view/2783.
[422] Gyanwali P, H. B. (2015). Surveillance of Quality of Medicines Available in Surveillance of Quality of Medicines Available in Valley. Journal of Nepal Health Research Council, 13(31), 233-240. Retrieved from file:///C:/Users/acer/Downloads/678-Article%20Text-1268-1-10-20160317.pdf.

showed that 40 percent of samples failed to meet standards among domestic companies and 28 percent among imported brands. Altogether, 32.5 percent of samples were found to be of substandard quality.

Similarly, an assessment conducted by the Nepal Health Research Council confirmed that among the total drugs sent for in-vitro analysis in two laboratories, Paracetamol 500 mg BP (Cetophen), supplied as an essential drug by GON, was found to be substandard.[423] Furthermore, the other eight drugs, including two essential drugs supplied by GON and six non-essential drugs supplied by the private sector, failed to meet the required standards in one laboratory. The assessment also identified a) non-compliance with all regulatory requirements and standards for labeling, b) large variations in price among drugs of different brands of the same generic name, and c) health facilities that did not fulfill all the criteria of standard storage systems for drugs.

The assessment also found that the lack of government oversight also led to the presence of unlicensed drug retailers. While practicing healthcare without a license is illegal in Nepal, weak monitoring of the Nepalese health system encourages pharmacies to operate without a license. A general lack of enforcement of legislation covering the registration of pharmacies allows the inappropriate dispensing of drugs in Nepal.

5.3.2.8 Poor Handling Practices and Inventory Management

The stability of drugs depends on environmental factors, such as temperature, air, light, and humidity. It is, therefore, essential to comply with optimum storage handling and transport requirements throughout the supply chain. In Nepal, the pharmaceutical industries invest a large proportion of their resources to marketing and advertising operations. The drive towards investing resources in marketing to promote business has swayed the attention away from investing in maintaining the quality of products in the handling, transportation, and storage stages, which affects the quality of the drugs. Given the diverse climatic conditions, poor road conditions, and perishable nature of drugs, it is essential that investments be made for proper handling, storage, and transport practices. However, a study that assessed standards of physical premises of pharmacies in terms of cleanliness, ventilation, protection from physical environment, spaciousness and storage facilities of the Kathmandu and Kaski districts in Nepal found that physical premise of many pharmacies was not found appropriate as provisioned in the good pharmacy practice requirements of Codes on Sales and Distribution of Drugs. In particular, the study found that pharmacies did not provide adequate storage space for different groups of drugs at the required temperature range.[424] The DDA introduced a document on "Good Pharmaceutical Practices,"

[423] Karki, K. B., Aryal, K. K., Gyawali, P., Pandit, A., Thapa, R. K., Maskey, J., . . . Humagain, B. (2017). Quality of Drugs and Drug Use Patterns at Different Level of Health Care Settings in Nepal, 2016. Kathmandu: Nepal Health Research Council. Retrieved from http://nhrc.gov.np/wp-content/uploads/2017/11/Final_Drug.pdf.

[424] Bhupendra Kumar Poude and Itsuko Ishii. (2016). Assessment of Physical Premises of Selected Pharmacies of Nepal. SAGE Open Medicine Volume 4: 1–5.

which is intended to serve as a quality assurance tool,[425] but the guidelines have yet to be released. Once implemented, the guidelines will help maintain the quality of drugs maintained in the supply chain. The incentives in the supply chain are mainly dependent on the volume of sales. However, to gain more incentives and discounts, the actors (both wholesalers and retailers) create artificial demand in the market that leads to overstocking and piling of drugs at various tiers. Such practices, coupled with the inadequate storage facilities and practices in the supply chain, increase the likelihood that the quality of the products will decrease over time as they move through the supply chain.

5.3.2.9 Lack of Certified Providers

Currently, numerous retail outlets across the nation can provide drugs to consumers. Anyone with a valid certificate of diploma in pharmacy, or a bachelor's degree in pharmacy, and training from the DDA, can open a pharmacy in Nepal.[426] This led to the proliferation of pharmacies, which created monitoring problems for the regulating agency. Hence, there is no guarantee that the consumer can receive a uniform quality of products and services across all pharmacies.

Similarly, wholesalers are not profiled based on the quality of the products and services that they deliver. Hence a risk-averse retailer has no options to choose a Grade A provider (based on its good storage and transportation facilities) versus a Grade C provider (who does not adhere to good pharmaceutical practices). As a result, information asymmetry creates a sub-optimal equilibrium where consumers are not able to exercise a purchase decision that can discipline the conduct of agents in the supply chain. Furthermore, agents do not have any incentives to improve product quality offerings since the market does not reward such actions, and since consumers are not able to differentiate better product offerings from other market providers, thereby perpetuating the pharmaceutical supply chain's poor performance.

5.3.3 Government Investment in Health Services Compared with Private Investment

The total health expenditure of Nepal is 6.3 percent of GDP, which is more than that of the other countries in the region.[427] However, more than 90 percent of total health expenditure is made on the current health expenditure, which only includes healthcare goods and services consumed during each year.

[425] Nepal Pharmacy Council. (2005). National Good Pharmacy Practice Guidelines. Kathmandu: Department of Drug Administration. Retrieved from http://nepalpolicynet.com/images/documents/publichealth/regulations/DoDA_2005_National%20Good%20Pharmacy%20Practice%20GuidelineseDraft.pdf.

[426] Aryal, B. P. (2016). 3,000 Pharmacies Operating Illegally Across the Country: DDA. Kathmandu: Nepal Republic Media Private Limited. Retrieved from https://myrepublica.nagariknetwork.com/news/3-000-pharmacies-operating-illegally-across-the-country-dda/.

[427] For India, it was 4.7 percentage, Bangladesh 2.3 percentage, Bhutan 3.5 percentage and China 5 percentage in 2016 according to the World Bank data.

The total investment on capital health expenditures, such as buildings, machinery, IT, and stocks of vaccines for emergencies or outbreaks, stands at an average of a mere 0.4 percent of GDP. The capital health expenditure for Belgium was 0.8 percent of GDP, followed by a group of countries, including France, Germany, and the United States, all spending more than 0.6 percent of GDP in 2013.[428]

Table 19: Breakdown of Health Expenditure in Nepal

Particulars	FY 2012/13	FY 2013/14	FY 2014/15	FY 2015/2016
Total Health Expenditure as % of Gross Domestic Product	5.78	6.08	6.56	6.72
Current Health Expenditure as % Gross Domestic Product	5.32	5.77	6.25	6.29
Capital Health Expenditure as % Gross Domestic Product	0.5	0.3	0.3	0.4

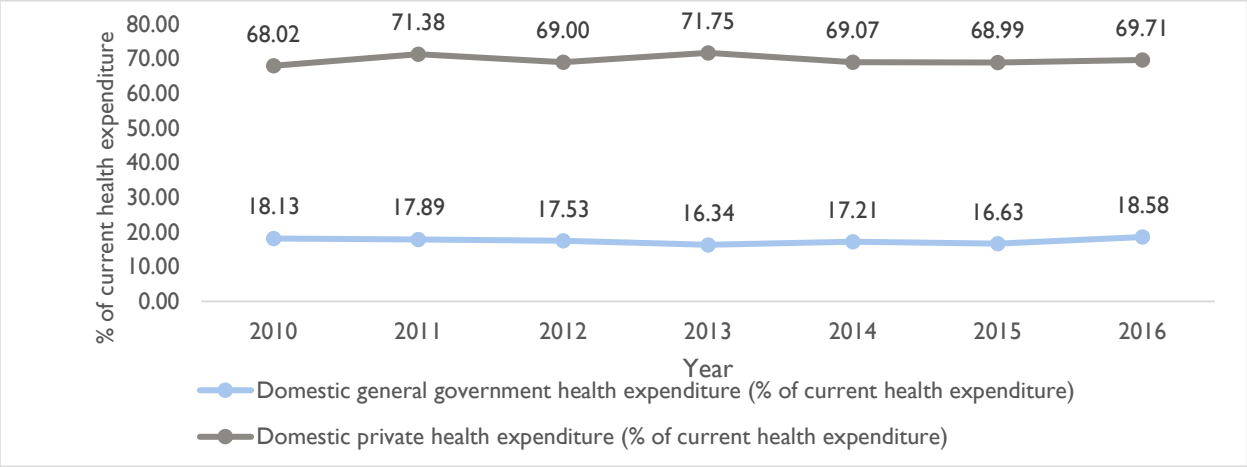
Source: Ministry of Health and Population (2018).

When the current health expenditure is examined further, the private sector's contribution to current health expenditure is an average of 69.7 percent compared to an average of 17.5 percentage contributions made by the government (Figure 29). Since public capital expenditure is influenced by a host of factors outside of commercial considerations, and given its low share of total health expenditure, it is highly unlikely that public expenditure has crowded out private expenditure. Instead, public and private capital expenditure may be complementary. For example, private facilities are mainly located in urban areas and serve the higher income households, while public facilities are in rural areas and serve the lower income households. However, for citizens with an option choose private hospitals over public hospitals due to the poor quality of infrastructure and the poor health services in the government hospitals.

In the current scenario, with the onset of federalization, the private sector has increased its investment in the health sector in satellite cities and the urban areas. Similarly, the MoHP has a provision of establishing four categories of government-run hospitals throughout the country for which it has expanded investment in the health sector. Thus, the overall investment in the health sector will expand, but efficiency and service delivery of the public facilities need to be enhanced for citizens to gain benefits from the public investment.

[428] OECD. (2015). Capital Expenditure in the Health Sector. In OECD, Health at a Glance 2015: OECD Indicator (pp. 175-175). Paris: OECD Publishing. Retrieved from https://www.oecd-ilibrary.org/docserver/health_glance-2015-64-en.pdf?expires=1580463363&id=id&accname=guest&checksum=F76643C57666D46728F8D5C11BB25886

Figure 33: Government vs. Private Health Expenditure as a Percentage of Current Health Expenditure



Source: Databank, World Bank.

5.3.4 Hindrances to the Development and Usage of Financial and Insurance Health Products

Health insurance covers the cost of an insured individual's medical and surgical expenses to some or to the full extent, depending upon the policy opted by the customers. It can be either public (government) health insurance or private health insurance. Depending on the type of health insurance coverage, either the insured pays costs out of pocket and receives reimbursement, or the insurer makes payments directly to the provider. In the case of Nepal, however, the biggest portion (55.4 percent) of current health expenditure is in OPPs, which shows the frail state of health insurance in Nepal.

When it comes to health insurance, although aware individuals may choose to insure against health risks, the efficiency of the market highly depends on the supply side. Three main assumptions are needed for the provision of insurance through private markets to be efficient: a) minimal administrative costs, or any other cost, outside the agreed reimbursements, b) firms should be risk-neutral, and c) enough number of firms for healthy competition. This, in turn, assures that premiums are actuarially fair (i.e., that they reflect the actual risk profiles of the insured subject and the expected payouts). The optimal insurance coverage then emerges from a bargaining process where risk-averse people, perfectly informed about their risks, will choose full coverage (i.e., reimbursement of all the medical expenses they will incur if they get ill) in exchange of the fair premium offered by perfectly informed firms working in a competitive environment. In this ideal model, markets are efficient, and people get their fair deal. In Nepal's case, however, the development of health insurance is at a nascent stage, product range is limited (mainly due to the lack of flexibility given to insurance companies to determine the product prices because of the regulatory environment), and well-informed, risk-averse consumers have limited

choice over the type of products that suit their needs. Some of the available health insurance schemes and their challenges are elaborated in the sections below.

5.3.4.1 Public Sector Schemes and Challenges

1. Government-sponsored health insurance program - The government increased its investment in the health sector by investing in the insurance sector, whereas the private sector presence in health financing is nominal. It established the Health Insurance Board, under the Health Insurance Act, 2074 (2017), to ensure universal health coverage by increasing access to, and utilization of, necessary quality health services. The Act requires every Nepali citizen to be enrolled in a health insurance program. As per the Act, the social health services will cover services like yoga, nutrition, vaccination, psychosocial counseling, family planning, safe motherhood, outpatient services, emergency health services, operation, drugs, rehabilitation, and ambulance services, among others. When a family (mother, father, and children – a total of 5 members) pays a premium NPR 3,500, all of them are insured into the scheme with an allowed maximum benefit of NPR 100,000. If there are 6-7 members in a family, then additional premium of NPR 700 is paid per member. When additional premium is paid, the amount that the scheme will cover increases by NPR 20,000. However, it should not exceed the allowed maximum benefit of NPR 200,000. The amounts are paid for a year, beginning either Mangsir, Bhadra, Jestha, or Falgun. The insurance plan provides flexibility in terms of ending the plan or renewing the plan for a year or even for a shorter period of three months.

As per health insurance regulations, health insurance is a social contributory program with subsidies to the poor. A 100 percent subsidy is provided to the very poor, senior citizens, and patients with multidrug-resistant tuberculosis, HIV/AIDS, or leprosy; while a 75 percent subsidy is provided to the poor, and a 60 percent subsidy is provided to marginalized citizens.[429]

The government has already introduced the insurance scheme in 49 districts, and the Health Insurance Board plans to introduce the insurance scheme to all 77 districts by the end of FY 2018/19. As per the Health Insurance Board, 2.5 million citizens from 710,000 households are currently enrolled under the insurance scheme.[430] The scheme intends to reduce citizen's out-of-pocket expenses for medical treatment, which stands at 55 percent in Nepal.[431] To date, the insurance plan's financial viability has not been assessed yet. Indicators such as health services required by patients and not offered by public hospitals, reimbursement rates received by patients, payment rates received by participating public hospitals, and cash position of the IB can be monitored to assess the effectiveness and long-term viability of the GON's insurance plan.

[429] Definitions of the categories added to Appendix 26.
[430] Gorkhapatra. (2019). 2.5 million Population Benefited by the Health Insurance Scheme. Kathmandu: Gorkhapatra Corporation
[431] Subedi, S. (2019). Multi-billion-rupee Health Insurance Scheme in Crisis. Kathmandu: Nepal Republic Media Private Limited. Retrieved from https://myrepublica.nagariknetwork.com/news/multi-billion-rupee-health-insurance-scheme-in-crisis/

2. Healthcare services under the Social Security Fund - As per the Social Security Act 2017, the government established the Social Security Fund to provide various social security services. The scheme includes the following: a) Medical Treatment, b) Health and Maternity Protection Scheme, and c) Accidental and Disability Protection Scheme, d) Dependent Family Protection Scheme, and e) Old Age Protection Scheme. The contributors receiving health benefits under the Social Security Scheme are not prevented from obtaining any other health-related benefits from the GON, or under any other insurance schemes. The employer is required to contribute 20 percent of the employee's basic salary each month to the Social Security Fund, and the employee contributes 11 percent.

Challenges

Inadequate Budgetary Support: The quality and access to healthcare facilities provided by the government remain a key challenge. Every year, the government spends about 4.4 percent of its budget on healthcare (approximately NRs. 56.12 billion in the FY 2019/20). Nonetheless, the budgetary support allocated for the MoHP is inadequate to complete its annual plans.[432] The budget allocated for the insurance program was NPR 6 billion in the FY 2019/20.[433]

Health Care Facility Under New Federal Structure: With the transition of government towards the federal structure, the health care system is going to see drastic changes, and local governments are going to be more responsible in providing health services, and hence accountable on the adequacy and quality of those services. Nonetheless, it will take time to establish operationally such a health system at the sub-national levels, as there is confusion among the different layers of government. Furthermore, the local governments do not have the adequate capacity to implement plans on their own, although they are mandated to do so, nor do they receive direct support from the central or provincial governments with their newly assigned responsibilities.

Effectiveness of Health Insurance Program is a Key Challenge: The effort of the government to introduce the health insurance program on a stand-alone basis without the engagement of the private sector will make it difficult to sustain, given that the government lacks experience and management capacity. Moreover, as the health insurance program offers healthcare services from designated government-owned hospitals and pharmacies only, the quality of services rendered by these entities are often below average, if they are at all available

Additionally, there is a lack of trust in the healthcare services provided by government-owned hospitals. Another challenge is the purported unavailability of prescribed services at designated hospitals and drugs at the pharmacies. According to a recent study, the scheme faces future challenges because of the unavailability of drugs, inadequate laboratory services, inadequate human resources, as well as people's

[432] Himalayan News Service. (2019). Minister Urges Government to Allocate More Budget for Health Sector. Kathmandu: International Media Network-Nepal Private Limited. Retrieved from https://thehimalayantimes.com/kathmandu/minister-urges-government-to-allocate-more-budget-for-health-sector/

[433] Ministry of Finance (2019). Nepal Federal Budget 2019-20. Kathmandu. Ministry of Finance, Government of Nepal.

lack of awareness.[434] This has resulted in mistrust and dissatisfaction among the people who have taken up or subscribed to the government insurance program.

Social Security Fund Deemed Unattractive: The total amount of the 31 percent contribution made by the employer and employee will be allocated to the different schemes in the following manner: Medical Treatment, Health and Maternity Protection Scheme (1 percent), Accident and Disability Protection Scheme (1.4 percent), Dependent Family Protection Scheme (0.27 percent), and Old Age Protection Scheme (28.33 percent). Since the contribution to the medical treatment, health and maternity protection is very low and the insurance coverage will only be offered through public medical centers, the scheme could face similar challenges the government health insurance scheme faced in terms of the adequacy of health services. Most of the participating contributors, mainly employers and employees, hesitate to participate in the scheme as they do not have faith in the quality of services that the plan offers. The participation in the Social Security Fund (SSF) has been very low, mainly because of the lack of clarity and conflicting provisions in the distribution of benefits. The GON is working on the revised modality for SSF; hence it is too early to assess the benefits as it remains to be fully rolled out.

5.3.4.2 Private Sector Schemes and Challenges

1. **Private Sector-led Health Insurance Policies Limited to Accidental Insurance:** Until mid-March of the FY 2018/19, 40 insurance companies were operating in Nepal, including 19 life insurance companies, 20 non-life insurance companies, and one reinsurance company, all established and governed under the Insurance Act 1992 and regulated by the Insurance Board. The main driver of these insurance industries is life insurance. As per the 2015 Making Access Possible (MAP) Finscope Study,[435] life insurance has the highest coverage rate (44 percent) among the insured population. In terms of health/medical insurance, most insurance companies offer personal and group accidental insurance policies, while a few only offer additional coverage on critical illness and hospitalization, which are limited as additional riders (with extra premiums). Since health or medical insurance policy is a loss-making product for insurance companies, most insurance companies offer group medical/health insurance policies to few business corporations largely to accommodate other business opportunities associated with the health insurance services. The pricing of the health or medical insurance is regulated, and the uptake is limited. Under this scenario, the volume of health or medical insurance is limited making it unfeasible. This is the primary reason why the insurance companies are providing health or medical insurance under Group policy (minimum 5 members) coupled with the uptake of other insurance products (life, property etc.)

[434] Nepal Health Research Council. (2018). Assessment of Social Health Insurance Scheme in Selected Districts of Nepal. Kathmandu: Nepal Health Research Council. Retrieved from http://nhrc.gov.np/wp-content/uploads/2019/04/Health-Insurence-CTP.pdf.

[435] Making Access Possible (MAP) is a multi-country initiative to support financial inclusion through a process of evidence-based country diagnostic and stakeholder dialogue, leading to the development of national financial inclusion roadmaps that identify key drivers of financial inclusion and recommended action. The MAP Finscope study is the financial inclusion country report under the MAP Nepal initiative.

2. Banking Sector Promoting Insurance Products*:* To attract deposits, BFIs introduced various attractive deposit accounts with minimum daily balances (ranging from NRs. 15,000 and above) bundled with appealing insurance features in partnership with insurance companies. To the account holders, BFIs offer extensive accidental death/permanent disability coverage along with coverage for critical illness. In addition, a few banks offer medical insurance (hospitalization case) for a family up to a maximum of NPR 1 to 1.5 lakhs. These deposit schemes, with insurance, increased the awareness of insurance products and increased its uptake. Furthermore, the redemption or payments of insurance claims by banks, give a positive impression and show the value and benefit of insurance. Similarly, banks were key selling agents, or touchpoints, in selling insurance products, such as bank assurance.[436]

Challenges

High Penetration of Informal Insurance: Since the range of insurance products is limited to group hospitalization and are corporate-led schemes, risk-averse individuals have no choice but to acquire insurance products from informal providers. As per the 2015 MAP Finscope results, 9 percent of the adult population acquired informal insurance. Such informal insurance in Nepal occurs in two forms: a) schemes offered by local cooperatives and microfinance companies informally against the loan acquired by individuals, and b) Indian insurance schemes from various agents,[437] given Nepal's high external spending[438] on health as a proportion of current health spending (11.6 percent), compared to other countries in South Asia.[439] Since these are informal channels, the risk of non-reimbursement to claims is higher, thus risking consumers' investments.

Uptake of Insurance Products Not Attractive: Despite the aftermath of the devastating 2015 earthquake, the insurance industry did not see an uptake of insurance products.[440] Low exposure to the insurance industry in Nepal, as well as low financial literacy, resulted in a significant proportion of the adult population failing to see the value of insurance in general, including for health care.[441] The majority of the population still sees insurance as an additional expensive cost rather than a risk management instrument. Also, due to lack of volume, insurance companies are not able to offer insurance products at attractive premium prices. According to the 2015 MAP Finscope Study, only 11 percent of adults in Nepal have formal insurance coverage, while only 1 percent of the adult population use insurance as a risk mitigation mechanism.[442] This is because insurance is a low-priority for 26 percent of the poor

[436] Bank assurance is a relationship between a bank and an insurance company that is aimed at offering insurance products or insurance benefits to the bank's customers.
[437] Shakya, S. B. (2016). Making Access Possible: Nepal Financial Inclusion Country Report. New York: United Nations Capital Development Fund. Retrieved from https://www.uncdf.org/download/file/127/5110/131217-map-country-report-nepalpdf
[438] This indicator calculates the average external sources spent on health as a proportion of current health spending.
[439] As per the World Bank Data on external health spending as a proportion of current health spending.
[440] Karki, D., & Khatiwada, S. (2016). Disaster Under-Insurance in Nepal. Kathmandu: Samriddhi Foundation.
[441] Shakya, S. B. (2016). Making Access Possible: Nepal Financial Inclusion Country Report. New York: United Nations Capital Development Fund. Retrieved from https://www.uncdf.org/download/file/127/5110/131217-map-country-report-nepalpdf
[442] Ibid.

Nepali households as it competes with food, shelter, clothing, and other necessities.[443] There is limited, sustainable and equitable growth in the purchasing power of the overall population. Due to these factors, insurance products are not a widely used among poor households. Insurance is not yet perceived by this household group as an instrument to protect lives, assets, and livelihoods.

5.3.5 Serving the Interests of Vulnerable Communities

Given that healthcare is a fundamental right of every citizen granted by the Constitution, the burden to ensure that this right is respected remains mainly on the public sector. In this context, the government introduced the Social Health Security Scheme in 2013 to increase access to health services for the poor, the marginalized, and the hard-to-reach populations in isolated parts of the country. Similarly, the Health Insurance Board was established in 2017 to ensure universal health coverage by increasing access to, and utilization of, necessary quality health services. However, the health system in Nepal, especially in the rural areas, faces daunting challenges, such as the unequal distribution of health care services, poor infrastructure, inadequate supply of essential drugs, poorly regulated private providers, inadequate budget allocation for health, and poor retention of human resources. This highlights the needs for the GON to initiate partnership strategies with the private sector to increase the public's access to good quality health products and services. The following approaches could be accommodated within programming strategies to better achieve this goal:

- Alleviate market inefficiencies, such as supernormal profits in the pharmaceutical supply chain, to reduce the cost of medical goods and better ensure the supply of affordable products and services in the market.
- Engage all three tiers of government to work with the private sector to strengthen the diagnosis, treatment, and care of patients in vulnerable communities to improve their health conditions. For instance, corporate social responsibility funds and marketing strategies of pharmaceutical companies and hospitals could be mobilized and utilized in six ways:

    1. Operate health camps in remote and under-served parts of the country, providing free diagnosis and supply of medical supplies.
    2. Encourage the private sector to invest in making community user groups to raise awareness on the quality of drugs and various diseases.
    3. Motivate to invest in infrastructure in rural areas that are in dire need of standard healthcare facilities.
    4. Subsidize the cost of drugs for vulnerable communities, in addition to those listed in the essential drugs list.

[443] Asian Development Bank. (2019). The Enabling Environment for Disaster Risk Financing in Nepal. Manila: Asian Development Bank. Retrieved from https://reliefweb.int/sites/reliefweb.int/files/resources/environment-disaster-risk-financing-nepal.pdf

5. Incentivize health service providers, such as medical practitioners and pharmacists, to serve in remote areas.
6. Strengthen the capacity of the local government to monitor and ensure uninterrupted access to drugs in rural areas.

5.4 CONCLUSIONS AND RECOMMENDAITONS

While Nepal is behind in many health-related global benchmarks, the situation has improved in the last two decades. However, the increasing health demand is not being met. Poor and underdeveloped inputs to the health sector, coupled with a higher demand for quality services, is leading to increased OPP on healthcare. A majority of OPPs are spent on drugs and medical goods at the retail level. Hence, this sub-study focused on analyzing the pharmaceutical supply chain and health services associated with delivery (specifically the prescribing of standard drugs) to improve access to good quality health products and services.

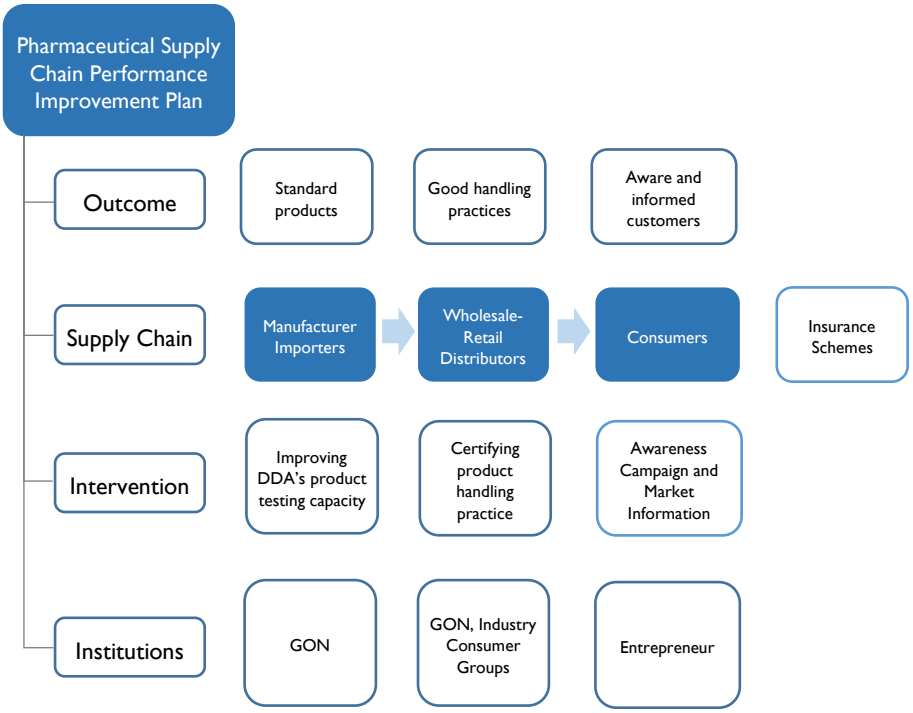
The study found that many factors resulted in market inefficiencies in the delivery of standard drugs and quality health services. Manufacturers and importers promote their products by providing incentives to other actors in the supply chain – especially the prescribers and the dispensers of drugs. This has triggered unethical practices in the prescription of drugs to consumers. In addition, with the lack of market information that would allow consumers to differentiate pharmacies in terms of the quality of the product they provide in the market, pharmacies can avoid investing in the proper handling, storage and transport facilities that would maintain the quality of their products. Improper inventory management at various levels of the supply chain, coupled with poor handling practices, contributed to the degradation of the therapeutic properties of drugs offered in the market.

Embedded incentives between various stakeholders on sales of products increased the cost burden on consumers and created inefficiencies in the availability of drugs in proper quantities and doses. Moreover, since the domestic manufacturers stick to "me-too" products, product innovation and diversification are limited. Domestic manufacturers compete on first movers' advantage and sometimes restrict the entry of other firms to create a monopoly in the market. Lack of product innovation, coupled with non-disclosure of profits in terms of cost of production, led to supernormal profits for the stakeholders. However, the lack of options for consumers to choose quality products and pharmacies hinders consumers' ability to exercise their purchase decisions. While the DDA, as a regulator, is responsible for monitoring the supply chain, a lack of workforce and equipment capacity led to weak quality assurance of products available in the market.

Amidst these market inefficiencies, substandard drugs remain commingled in the market, and artificial product differentiation enables suppliers to provide drugs in the market at inflated prices. The pharmaceutical supply chain cannot correct inefficiencies on its own, and, as a result and without government intervention, the poor performance has been perpetuated over time. The study recommends the interventions described below to improve the performance of the pharmaceutical

supply chain in providing quality products at competitive prices. Thus, Nepal needs a multifaceted approach to strategically introduce interventions at various stages of the supply chain in order to establish a consistent incentive structure that would allow market agents to improve the performance of the supply chain organically and systemically. Figure 34 lists the mutually reinforcing interventions at strategic stages of the supply chain to trigger the transformation of the pharmaceutical supply chain. The underlying principle undergirding all these recommendations is to empower Nepali customers with market information that will enable them to differentiate competing market providers and exercise their purchase decision in such a manner as to influence the conduct of those providers, which will ultimately improve the performance of the entire pharmaceutical supply chain.

Figure 34. Multi-faceted Set of Mutually Re-enforcing Interventions to Improve the Performance of the Pharmaceutical Supply Chain



Source: Internal Analysis

1. Implement certification procedures and supportive processes throughout the supply chain to maintain product quality: To maintain the therapeutic properties of pharmaceutical products as they move through the supply chain and up to the point of the last sale, each actor in the supply chain – including manufacturers, importers, wholesale distributors, and pharmacies – must be incentivized to perform their part according to regulatory requirements and standard practices

recommended by international entities. However, compliance will cost wholesale and retail distributors in terms of facilities and equipment that are needed to support those good practices. Since the market does not currently penalize distributors for poor product handling practices, they are not incentivized to make those investments, and, as a result, product quality is compromised as they move through the supply chain. One approach to connect product handling practices with the distributors' revenue stream is to certify those that practice good product handling practices. This will allow the market to differentiate distributors based on product handling practices, enabling customers to penalize poor practices and reward good practices through their purchase decisions. An inspection and certification service can be jointly designed and implemented by the GON (DDA), the industry association, and consumer advocacy groups. The certification may be based on standards, such as a) cleanliness – free from dirt, dust, and pests, b) ventilation – adequate passage of ambient air for proper aeration, c) protection from physical environment – from direct sunlight, heat, and humidity, d) spaciousness – adequate space for holding shelves and proper movement of staff and clients, e) storage facilities – adequate space with proper control of temperature, aeration, and humidity for different groups of drugs, f) inventory management (e.g., digital stocktaking) to allow traceability and avoid dispensing expired drugs, and g) source drugs from GPP certified manufacturers and importers.

Since the prescribers serve as the first step in the consumer's purchase decision, they can be tapped to educate their patients on the importance of purchasing drugs from properly certified pharmacies. Prescribers may be encouraged to participate in such a campaign as it will elevate the overall confidence level of consumers on the entire supply chain. Or, DDA may require them to instruct patients to purchase the prescription from certified pharmacies only.

In addition, the insurance industry can play a critical role in creating a strong demand for quality pharmaceutical products by requiring insured parties to provide proof of purchase from certified pharmacies when submitting requests for reimbursements for covered medical expenses.

Once consumer demand for quality pharmaceutical products is established at the retail level, it will create a cascading derived demand in the rest of the supply chain, thereby achieving a market-based quality assurance mechanism. For example, pharmacies will source their supplies only from certified wholesale distributors, as such will be one of the criteria for their certification. For the same reason, wholesale distributors will only secure supplies from manufacturers and importers with GPP certification. As a certification system will require collaboration between the government and the private sector, which has not happened on its own, such an area offers rich opportunities for donors to engage with the private sector to bring together relevant players needed to be successful in this intervention.

2. Enhance the technical capacity of DDA to strengthen the quality assurance mechanisms of the supply chain: The growth of the pharmaceutical sector has overtaken the limited and overstretched technical capacity of the DDA, to ensure good performance of the pharmaceutical supply chain. DDA needs technical enhancement in three areas that are covered in the proposed interventions.

A. **Collaborate with the private sector for technical capacity enhancement:** Nepal hosts multiple internationally accredited laboratories. DDA could collaborate with these laboratories to make the inspection and monitoring of the pharmaceutical supply chain more effective and efficient in enhancing product quality control protocols and mechanisms.

B. **Strengthen the DDA and its staff in testing product quality**: to the GON needs to increase the capacity of DDA, in terms of infrastructure, testing facilities, and technical staff, to match the current demand of resources required in the DDA.

C. **Upgrade data management facilities:** As the DDA serves as a single repository of data and knowledge of the Nepali pharmaceutical market, it is essential to upgrade their data management facilities to a digital level. This area offers rich opportunities for the DDA to collaborate with the private sector.

D. **Collaborate with local governments and other GON agencies to fill the human resource gap:** The DDA serves as the only regulatory authority for the pharmaceutical sector in the entire nation. This imposes a huge burden on the DDA in terms of providing adequate staff coverage to meet its mandate. Hence, in the current context of federalization, DDA can partner with the sub-national governments and utilize their human resources to execute some functions that meet a shared objective. For example, the health officer recruited in each local government unit could be mobilized to perform DDA functions at the local level.

E. **Support the implementation of good pharmaceutical practices (GPhP):** Like in the case of GPP that DDA implemented, it is essential to execute GPhP in the supply chain.

3. Encourage ethical practices in prescribing medicines: Healthcare ethics is a sensitive subject matter within the medical profession. Pharmaceutical companies influence prescribers to favor their products by offering lucrative incentives. Such practices can be controlled by the strict implementation of regulations on ethical practices. Ethical codes already exist, such as the Code of Ethics and Professional Conducts prescribed by the Nepal Medical Council and Guidelines on Ethical Promotion of Drug, which is mandated by the DDA. However, enforcement of these regulatory approaches requires a cadre of professional, regulatory staff, and enforcement mechanisms, which is currently missing. Another feasible approach can empower consumers to substitute prescribed drugs based on a substitution database that is officially sanctioned by the DDA and developed through a partnership between the DDA, industry representatives, and consumer advocacy group.

4. Create an enabling environment for manufacturers to diversify their products: The high risk and cost associated with pharmaceutical product development needs a creative policy regime that will minimize the cost of failure as well as guarantee the revenue stream of investors until they recover investments in order to encourage product diversification. Incentives may include easing the requirement to import advanced technologies and to hire technical foreign workers required for promising product diversification projects.

5. Raise awareness among consumers: Consumer groups need to be keenly aware that poor quality pharmaceutical products do not only fail to treat maladies and raise the cost of treatments but

also that those products can cause adverse reactions and drug resistance, thereby exposing them to substantial health risks. Such awareness, coupled with market information, empowers consumers to discipline the conduct of actors in the market and improve the performance of the pharmaceutical supply chain to provide quality products at competitive prices. The GON (DDA), industry association, and consumer advocacy groups can partner to develop an awareness campaign strategy, including the development of the content of campaign materials and to support its implementation.

6. Provide relevant market information. The pharmaceutical supply chain suffers from severe information asymmetry that is biased against the consumers. Consumers must be empowered with relevant market information, such as the compliance of products to quality standards, the product handling, and the product pricing practices of distributors, to enable them to exercise their purchase decisions (i.e., what, when, how many, from whom to buy, and how much to pay) in a manner that would affect the financial position of agents in the market, and therefore influence agents' conduct in the market to provide pharmaceutical products with efficacious therapeutic products at competitive prices. An entrepreneur can develop this platform and provide a market information service that is supported by a revenue model, through user fees or advertisements that can pay for the development of the system, the regular updates of its contents, and, at the same time, guarantee a remunerative return on investment.

7. Review the pricing mechanisms in the market: Currently, the market consists of a mix of products with price control and products with no price control. However, even the latter category of products, the GON still control market prices by not allowing manufacturers to change prices in excess of 10 percent annually. The GON may need to revisit the policy of pricing pharmaceutical products, to assess its impact on product innovation and diversification, as well as its impact on consumer access to quality pharmaceutical products in the market. Donors can help support the assessment by providing the best international practices on pricing pharmaceutical products.

8. Involve the private sector in the delivery of government-led health insurance schemes: The GON's insurance schemes – both the SSF and Health Insurance Scheme – faced challenges in terms of providing adequate health services delivery due to a lack of infrastructure and equipment in government-owned hospitals. This adversely affected the renewal of the subscription to those programs, and it created a poor perception of health insurance in Nepal. Giving consumers the choice of health service providers will create a healthy competition between public and private providers that will ultimately improve the quality of their health services. The government can negotiate with private providers for competitive rates and may offer other incentives, such as tax breaks and duty exemptions in the purchase of medical equipment, to facilitate agreement.

9. Government insurance scheme uptake by private insurance companies: The government should work together with the private sector for the effective implementation and success of its health insurance schemes. For this, the Health Insurance Board can open tenders for insurance companies (individually or by joint venture), where they can bid to manage the government schemes across Nepal for premiums based on their actuarial studies. This arrangement will leverage the private sector's technical know-how, expertise, and efficiencies to increase the volume, delivery, and reach of the

insurance schemes, as well as control the premium rates. To achieve the vision of universal health coverage under this private sector-led implementation, the GON will still need to subsidize the premium payments of the poor and marginalized population groups, a scheme like the implementation of crop insurance in Nepal.

6.0 EDUCATION: DEMAND FOR LEARNING AND PRODUCTIVITY GAINS IN THE ECONOMY

6.1 INTRODUCTION

Nepal has two broad categories of educational systems based on the source of investment support - public and private education systems.[444] Public schools are referred to as community schools and private schools are referred to as institutional schools. While private entrepreneurs fund private schools, public schools are fully financed and operated by the government.[445] The education sector contributed an average of 6 percent to GDP from 2010 to 2018. Over the last five fiscal years, the GON allocated 10 percent of the total annual budget to educational services.

Nepal divides formal education into five levels,[446] including lower basic, basic, lower secondary, secondary, and tertiary.[447] Lower basic is the first five years of schooling – ECD through grade 555 – which is followed by the upper basic level that takes eight years to complete (classes 1 to 8). Lower secondary level covers classes 9 and 10. When students reach the higher secondary level, classes 11 and 12, they choose an area of specialization, such as science, commerce, or the humanities. At the tertiary education level, students receive a bachelor's degree after three or four years of schooling. Those with a bachelor's degree have the option to pursue a post-graduate master's degree, which will take an additional two years of schooling.[448]

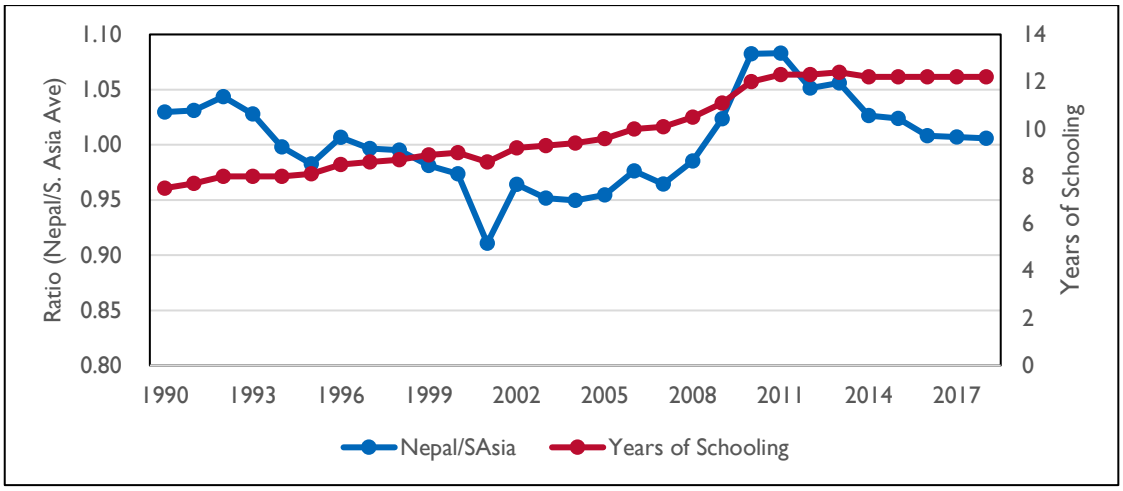
Besides the education program that leads to an academic degree, the GON also offers a technical education and vocational training (TVET) program, which focuses on providing individuals with specialized skills in sectors, including health, tourism, and agriculture.[449] Every year, approximately 61,000 people complete a TVET program, and 70 percent of the graduates successfully find jobs.[450]

Over the past 15 years, Nepal made significant progress in educational outcomes, whereby net enrollment exceeded 95 percent.[451] In 1951, Nepal had 350 schools, 11 high schools, and two colleges. By 2017/2018, the number of schools providing primary, lower secondary, and secondary education

[444] There are 6,566 private schools and 29,035 public schools as of 2017 (Education at Glance, 2017)
[445] Koirala, A. (2015). Debate on Public and Private schools in Nepal . International Journal of Management and Sciences . Retreived from: https://www.nepjol.info/index.php/IJSSM/article/view/11882.
[446] Earlier the education system was divided into primary (up to grade 5), lower secondary (up to grade 8), secondary (grade 9 and 10), Higher secondary (grade 11 and 12) and university (Bachelor and above).
[447] Tertiary includes—Bachelor's, Master's (and PhD) and Professional degree.
[448] The academic programs for bachelor and master are in semester system.
[449] However, there are some of the TVET programs specially of longer term in nature also lead to academic degree.
[450] nefport. (2019). Role of Technical and Vocational Education in Nepali Skill and Labor Landscape. Nepal Economic Forum . Retreived from: https://nepaleconomicforum.org/portfolio/nefport-issue-36/.
[451] SABER Country Report. (2016). Engaging the Private Sector in Education. SABER. Retrieved from: http://documents.worldbank.org/curated/en/824511492491355799/pdf/114311-WP-PUBLIC-SABER-EPS-NEPAL-2016.pdf

increased to 35,601.[452,453] In addition to successfully expanding access to education services for the Nepali people, the country also made modest progress in terms of the quality of education services, as suggested by some macro education indicators. For example, Nepal showed a faster increase in the expected years of schooling compared to its neighbors in the South Asia region. After lagging behind its neighbors in expected years of schooling for a decade, from 1998 to 2008, Nepal's gain accelerated and surpassed its neighbors beginning in 2009. Nepal maintained such an advantage until the present period (Figure 35). The red line presents average years of schooling in Nepal with the ratio between Nepal and the rest of South Asia in blue, where the ratio increased above 1 in 2009. Furthermore, Nepal surpassed its neighbors in quality-adjusted years of schooling in 2018. The country even ranked higher than low-income and lower-middle-income countries on education quality in USAID's journey to self-reliance metrics (Figure 36).

Figure 35: Expected Years of Schooling

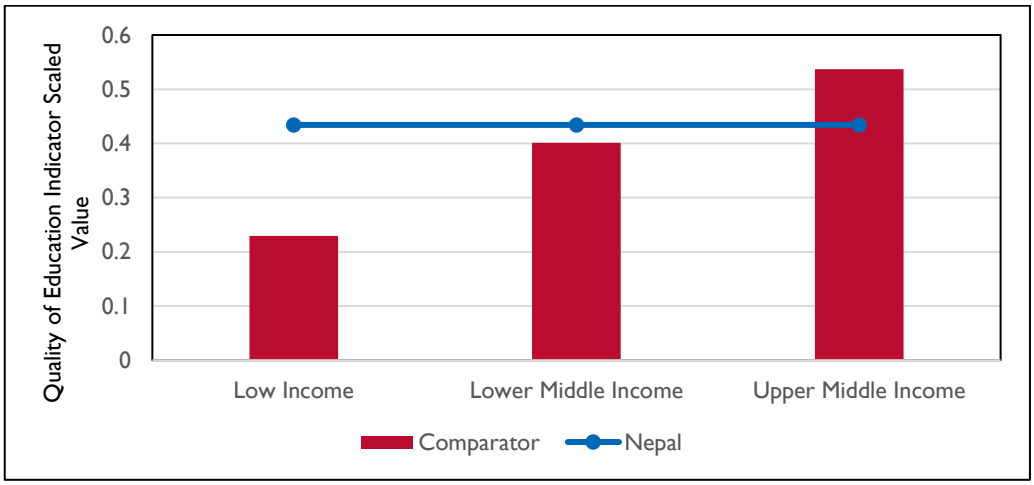


Source: United Nations, Human Development Index.

[452] Akanda, A. S. (2010). Returns to Education in Nepal: Evidence from Living Standard Survey. Dhaka Univ. J. Sci. Retreive from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2146540.

[453] Ministry of Education, S. a. (2017). Education in Figures 2017. Governmeent of Nepal, Ministry of Education . Retrieved from: https://moe.gov.np/assets/uploads/files/Education_in_Figures_2017.pdf.

Figure 36: J2SR Indicator on Quality of Education



Source: USAID J2SR Database.

However, despite these encouraging education sector achievements, Nepal's labor market's performance has been weak for a long time. The expansion of access to education did not produce the expected improvements in productivity, as evidenced by the poor performance of the economy over many decades. In fact, a Nepali agricultural worker's value-added production represents only 17 percent of the average in South Asia. Nepal also ranked 69th of 77 emerging economies in terms of labor productivity (GDP per labor employed), which is the lowest in all of Asia. Unemployment and labor migration rates have been high. According to the Nepal Labor Force Survey (NLFS), the unemployment rate in Nepal is 11.4 percent (10.3 percent for males and 13.1 percent for females). Additionally, a 2018 World Bank report estimated that 28 percent of the Nepali workforce is working abroad.[454] The number of workers migrating to seek employment abroad remains high, reaching 363,000 in 2017/18, which is close to the estimated 378,000 new entrants in the labor market, suggesting a limited net job creation in the country.

In the past, countries addressed poor human capital through supply-side interventions such as improving the infrastructure of schooling – more schools, more teachers, more textbooks, and more access to all three. However, empirical evidence shows that the increase in schooling did not produce the productivity gains that were anticipated (Pritchett 2004). Rodrik (2004) explained that the reason is simple: The real constraint was the low demand for schooling – that is, the low propensity to acquire learning – in environments where the absence of economic opportunities depresses the return to education. Similarly, an expansion of an economy's scientific and technological capacity will not endow it with the needed productive dynamism unless there is adequate demand for innovation by the business

[454] World Bank (2018). Nepal Systematic Country Diagnostic. Washington, DC: World Bank Group.

sector (Rodrik 2004). This study examines the case in Nepal by estimating the return to education using the most recent labor and employment survey data.

According to the Nepal Labor Force Survey (NLFS), eight out of ten persons (80 percent) in Nepal's working population did not reach a secondary-level education. If level of education is correlated with the efficiency of the worker, this indicates a low level of efficiency of workers in Nepal. The study argues that, based on market evidence, the workforce's low level of education (hence productivity) is due to a weak demand, not low supply. That is, it is not the case that available human resources were not able to meet the needs of the country, but the lack of demand for a skilled workforce has shaped the state of the country's human resources, instead.

6.2 METHODOLOGY AND LIMITATIONS

The study aims to examine the following research questions.

- Is the private return to education (i.e., wage/salary premiums Nepalis receive from local and foreign employment by staying longer in school) remunerative enough to support an effective demand and to incentivize private sector investment to expand and improve quality of a) public education service (pre-primary - class 12 and TVET) and b) private education and services (pre-primary - class 12 and TVET)?
- Are there opportunities for private sector participation and investment to expand equitable access to quality education, especially in the public school system (e.g., investment to support the public school system, with a particular focus on primary grades and TVET, and to promote finance and deliver innovations)? What factors impede those investments?

6.2.1 Mincer Equation Models

The Mincer Equation – arguably the most widely used model in empirical work – explains employment earnings as a function of schooling and labor market experience. The Mincer Equation directly provides an estimate of the average monetary returns (in terms of wage premium) of one additional year of schooling. The model assumes that individuals make schooling decisions to maximize the present value of lifetime earnings. This study provides three specifications of the Mincer Equation.

Model 1 (Average return to education)

Model 1 tests the hypothesis that the attainment of higher levels of education in Nepal increases the earnings received by Nepali workers. Model 1 is specified in equation 1.

$$\ln wage_t = \propto_0 + \propto_1 experience_t + \propto_2 experience_t^2 + \propto_3 years\ in\ school_t + \varepsilon_t \qquad [1]$$

where the dependent variable is the natural logarithm of wages, and the explanatory variables include years of working experience and years of schooling, and all observations are indexed by year *t*. The model assumes that ε_t is a well-behaved error term and estimates all the parameters $\propto_0$, $\propto_1$, $\propto_2$, and $\propto_3$

Model 1.1 (Average return to education based on gender)

Model 1 estimates a highly aggregated average return to education. Model 1.1 augments the first model by obtaining a separate return to education using a sub-set of the data representing male and another for female workers.

- ***Model 1.2 (Average return to education with vocational training)***

The study assesses the impact of specialized skills training through a TVET program on the return to education. Model 1.2 augments the first model with an interaction term between the years of schooling and a dummy variable that represents respondents with TVET training. Model 1.2 is specified in equation 2 below, where the TVET education dummy variable $TVETG_t$ takes a value of 1 for workers with TVET training and 0, otherwise, and $\propto_5$ is the parameter associated with the TVET education dummy.

$$\ln wage_t = \propto_0 + \propto_1 experience_t + \propto_2 experience_t^2 + \propto_3 years\ in\ school_t + \propto_5 TVET_t * years\ in\ school_t + \varepsilon_t \quad [2]$$

Model 2: (Marginal return to education)

Model 1 estimated the average return to education[455] for an additional year of schooling, with the assumption that such return is constant regardless of the level of education that one more year is added to. Model 2 relaxes that assumption by allowing the return to education to vary by the level of educational attainment. Model 2 is specified in equation 3, where 9 education level dummy variables were generated with index *i* (for example Education Level dummy = 1 for workers with early childhood education and 0, otherwise), and β_i are 9 parameters associated with the 9 education level dummy variables.

$$\ln wage_t = \propto_0 + \propto_1 experience_t + \propto_2 experience_t^2 + \sum_{i=1}^{9} \beta_i Education\ Level_{it} + \varepsilon_t \quad [3]$$

The marginal return to education is calculated using equation 4.

$$Marginal\ Return\ Education\ Level_i = \frac{(\beta_i - \beta_{i-1})}{years\ of\ schooling_i} \quad [4]$$

Model 3: (Average return to education considering the education quality)

All the above models excluded the impact of the quality of education service on the return to education. Model 3 augments the first model with an interaction term between the years of schooling and an education quality dummy variable to obtain a separate estimate for the contribution of quality in education service to return to education. Following Biltagy (2012), Model 3 uses access to a computer with an internet connection as a proxy variable to represent the quality of education. Model 3 is specified in equation 5, where the Education Quality dummy variable takes a value of 1 for workers with access to a computer with an internet connection and 0, otherwise, and $\propto_6$ is the parameter associated with the Education Quality dummy variable.

[455] Considering all level at once as an independent variable.

$$\ln wage_t = \propto_0 + \propto_1 experience_t + \propto_2 experience_t^2 + \propto_3 years\ in\ school_t + \propto_6 Education\ Quality_t * years\ in\ school_t + \varepsilon_t \quad [5]$$

6.2.2 Data

The study used the Nepal Labor Force Survey (NLFS) 2017/18.[456] Nepal's Central Bureau of Statistics (CBS) conducts the NLFS every 10 years. The most recent one (NLFS 2017/18) is the third in the series of NFLSs.[457]The NLFS covers data on labor market indicators, such as household demographic data, educational attainment, hours of work, wages received, and types of occupation.

For the analysis, the study initially worked on a sub-set of the data based on employment status, which provided 8,172 observations. The study used the Mincer equation model to estimate the return to education as measured by the wage premium that workers receive by staying longer in school.

Table 20 summarizes the composition of the sample that the study used to estimate the return to education. Of the total 8,172 observations, male survey respondents represented 74 percent. The sample reveals differences in educational attainment between male and female respondents. The largest share of male respondents reported having finished classes 1 to 7 at 32 percent, followed by those who finished classes 9 to 10 at 19 percent, and those with no schooling at 18 percent. In contrast, the largest share of female respondents reported no schooling at 29 percent, followed by those who finished classes 11 to 12 at 19 percent, and those who finished classes 9 to 10 at 16 percent.

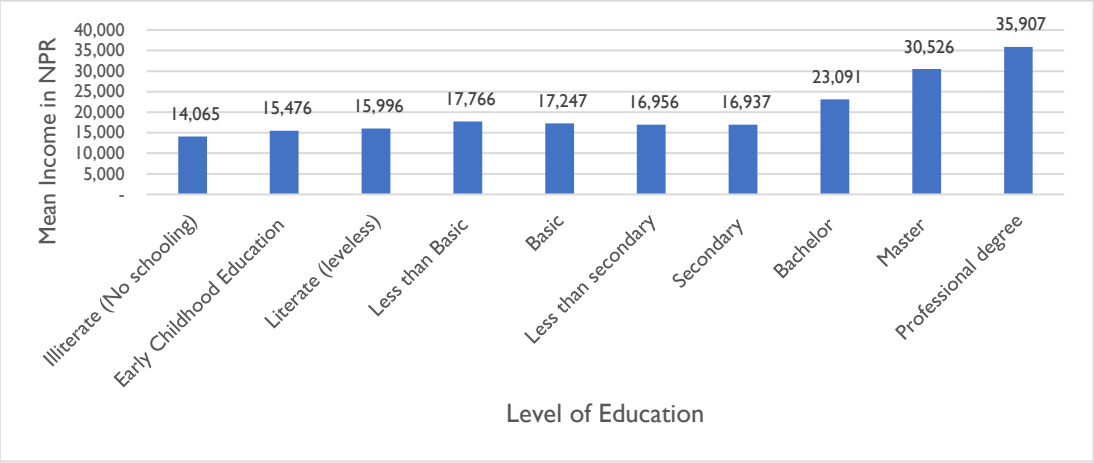
[456] CBS. (2017). Nepal Labour Force Survey 2017/18. Central Bureau of Statistics. Retrieved from: https://cbs.gov.np/
[457] Third survey followed NFFS I in 1998/99 and NLFS II in 2008.

Table 20. Sample Summary

			Count			Proportion		
	Class	Years	Male	Female	Total	Male	Female	Total
Educational Attainment								
Illiterate (No Schooling)			1,059	610	1,669	18%	29%	20%
Early Childhood Education		3	9	2	11	0%	0%	0%
Literate		3	155	75	230	3%	4%	3%
Lower Basic	1 to 7	7	1,915	302	2,217	32%	14%	27%
Basic	8	1	413	77	490	7%	4%	6%
Lower than Secondary	9 to 10	2	1,167	349	1,516	19%	16%	19%
Secondary	11 to 12	2	582	411	993	10%	19%	12%
Bachelor or Equivalent		3	461	222	683	8%	10%	8%
Masters and Above		2	271	85	356	4%	4%	4%
Professional		5	5	2	7	0%	0%	0%
Total			6,037	2,135	8,172	100%	100%	100%

Figure 37 shows the mean income by education level in Nepal. The wage differential grows slowly between early childhood education and secondary education levels and accelerates beginning at the bachelor level of education. Nepali workers with professional degrees invested 25 years in education and, as a result, earned NPR 35,907 per month, which is more than double the earnings of workers with no education (NPR 14,065) or a 6.2 percent wage premium for an additional year of schooling.

Figure 37: Mean Income in Nepal by Education Level



Source: Report on Nepal Labor Force Survey 2017/18.

6.2.3 Limitations

The Mincer Equation is based on a robust economic optimization model but is expressed in a single equation reduced form. As such, it is subject to the limitations that are common in all reduced form equations, such as endogeneity bias, where the dependent variable years of education is an endogenous variable and may be correlated with the error term. There are existing tools to correct for this bias, such as conducting an endogeneity test on the years of schooling, to determine the severity of the statistical problem, and to use an instrumental variable if found severe. However, given the many articles using Mincer Equation that were accepted for publication in reputable journals, the consensus in the community of practice must be that such statistical issue does not pose a serious problem to the point of changing the fundamental conclusions of many investigations, including this study. In addition, following Bitlagy (2012), the study chose access to a computer with an internet connection as a proxy variable to represent the quality of education based mainly on the availability of the variable in the survey.

6.3 FINDINGS

6.3.1 Model 1: Average Return to Education Based on the Level of Attainment

The Mincer Equation estimates the average return to education as the wage differential earned by a worker by staying one additional year of schooling. Model 1 assumes a constant return to education, regardless of the educational level that one more year of schooling is added to. Table 21 shows the estimation results of equation 1. As shown in table 21, all estimated parameters have the expected positive sign, indicating that both years of education and years of work experience increase the wage premium that is earned by a worker. All explanatory variables show statistical significance (t-ratio

greater than 2) except for the years of work experience, although the quadratic (squared) component of years of work experience is statistically significant. The model has a low R-squared, which indicates how much variation in the data is explained by the model. This is common in studies that use cross-sectional data rather than time-series data. Furthermore, given the focus on the estimate for the return to education, the model did not incorporate additional explanatory variables, such as those representing household demographics, which could have increased its explanatory power.

Table 21. Estimation of Average Return to Education Based on Model 1 in Equation 1

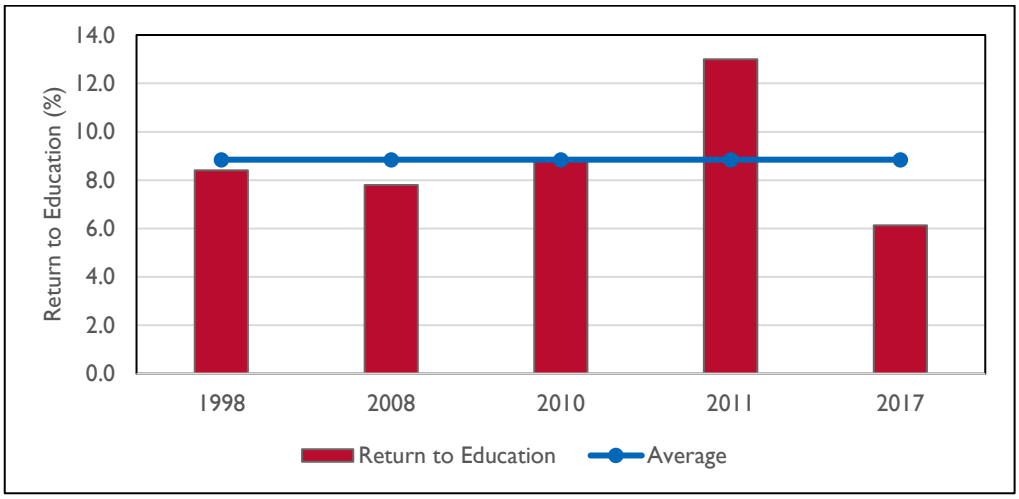
Number of Observations	8,127			
F (4, 8122)	242			
Prob > F	0.00			
R-squared	0.11			
Log of Monthly Income	Coefficient	Std Error	t-value	Prob > |t|
Explanatory Variable				
Years of Schooling	0.061	0.002	24.98	0.000
Years of Work Experience	0.007	0.007	0.99	0.323
Years of Work Experience Squared	0.002	0.001	2.71	0.007
Constant	9.248	0.016	563.24	0.000

Source: Study estimates.

The average return to education in Nepal based on the NLSS 2017/18 is 6.1 percent. This means that a student who opts to stay one additional year in school will expect to earn a wage that is higher by 6.1 percent compared to those who leave school a year early. This rate of return is low in many respects. First, a student who opts to stay one more year of school will incur the following costs a) one year of foregone wages, b) cost of living for one year, and c) cost of education services. Given these costs, the wage differential of 6.1 percent over prime working years translates to an internal rate of return of only 7.9 percent. This fails to surpass the hurdle of the 12 percent cost of capital[458] generally in Nepal, thereby making the investment to stay one more year in school an unprofitable financial proposition. Second, earlier studies have estimated Nepal's return to education as early as 1998, which were updated five times since, and the most recent one estimated by this study, at 6.1 percent, is a historic low rate of return to education (Figure 38). Third, Nepal's average return to education between 1998-2017 ranked in the lowest 36 percent of the 97 countries in the world who reported such number (Figure 39).

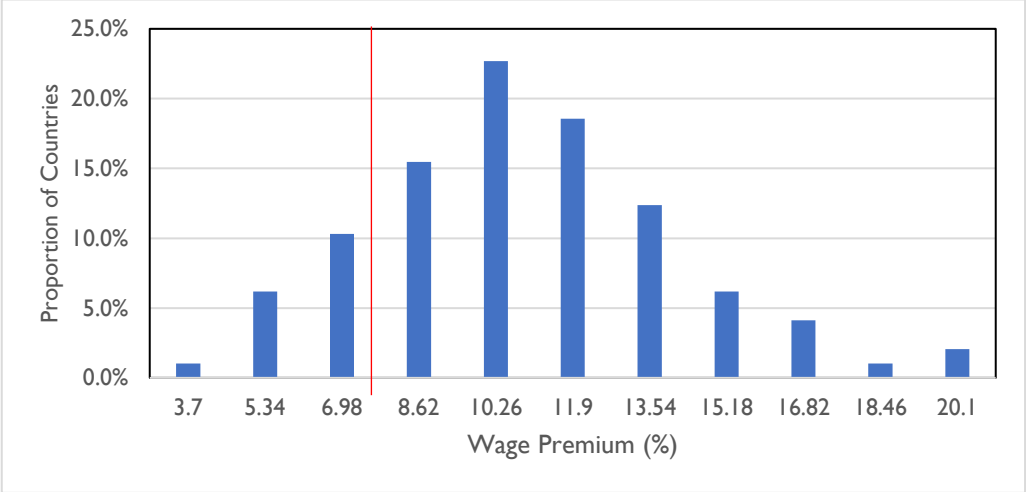
[458] Cost of capital refers to the opportunity cost of making specific investment.

Figure 38: Return to Education in Nepal, 1998-2017



Source: Study estimates.

Figure 39: Distribution of Return to Education for 97 Countries



Source: Montenegro et al. (2014).

Labor market demand and supply factors determine the wages and wage differentials in the market. Such wage differentials may be reflected in wages between public and private employment, between employment across sectors, and between ranks of the same position. For example, public sector employees earn less compared to private sector employees by as much as a 2 percent wage differential. Another example, average earning in agriculture is NPR 12,187/month, manufacturing is NPR 17,440/month, and NPR 19,000/month in the service sector. The Mincer Equation model assumes that workers' educational attainment increases the likelihood of them landing in those jobs with higher

wages. The low and declining return to education and the excess supply of labor in the form of high unemployment and high migration provide strong evidence that weakness in demand is the primary reason behind Nepal's poor labor market outcomes. The low return to education suggests that Nepali entrepreneurs and enterprises, faced with limited market opportunities abroad and a weak domestic economy, are not outbidding each other to secure a limited supply of human capital resources in the market. As a result, even if the additional years in schooling increase the likelihood of a worker landing in a higher-wage job, those wage differentials tend to be small.

Although education's positive impact on society[459], in general, is widely acknowledged, the analysis assessed only the private return to education, to meet the narrower objective of the study. The social return to education is greater than the private return as education has a significant positive impact on society.[460] This study did not consider the social benefits.[461]

6.3.2 Model 1.1: Average Return to Education Based on Gender

Gender and the labor market have always made for controversial discourse in labor economics. Model 1 examines the overall average return to education without distinguishing gender. Model 1.1 augmented the first model and focused on the difference in wage premium based on gender. The results from the model (Table 22) show a statistically significant average return to education for female workers, at 6.5 percent, which exceeds the return to education for male workers at 5.4 percent. The return to education for both male and female workers is low. It translates to only 7.19 percent and 8.22 percent internal rates of return over their entire working years, which fail to surpass the 12 percent cost of capital in Nepal. The difference in the return to education by gender is statistically significant. This result reflects the differences in educational attainment by gender in the NLFS data, where a higher proportion of male respondents (78 percent) had lower educational attainment (below secondary school level, or 16 years of schooling) compared to female respondents (66 percent). Furthermore, more female respondents (10 percent) had a bachelor's degree, at which point the marginal return to education begins to accelerate, compared to male respondents (8 percent). In fact, female workers receive 10 percent and 4 percent more in wages in the agriculture and construction sectors, respectively. This result also is consistent with global trends where the return to education for female workers at 10 percent exceeds that of male workers by 2 percentage points.[462] Furthermore, male and female workers of the same level of education earned a return to education of 5.7 percent and 6.5 percent, respectively. [463] Although 84 percent of the gender-based wage gap remains unexplained, [464] several studies have advanced several reasons for the discrepancy in the return to education by gender, including a) women

[459] Moretti, E. (2002). Estimating the Social Return to Higher Education: Evidence from Longitudinal and Repeated Cross-Sectional Data. NBER. Retrieved from: https://ideas.repec.org/p/nbr/nberwo/9108.html
[460] Moretti, E. (2002). Estimating the Social Return to Higher Education: Evidence from Longitudinal and Repeated Cross-Sectional Data. NBER. Retrieved from: https://ideas.repec.org/p/nbr/nberwo/9108.html
[461] Social benefits as calculated by (Patrinos and Psacharopoulous) is 9.1% in 1998.
[462] 1 Patrinos, G. P. (2018). Returns to Investment in Education: A Decennial Review of the Global Literature. *Education Economics.*
[463] Holding experience constant.
[464] Aslam, M. (2005). Rates of Return to Education by Gender in Pakistan. Global Poverty Research Group. Retreived from: http://www.gprg.org/pubs/workingpapers/pdfs/gprg-wps-064.pdf

tend to have better placement and cognitive skills compared to men; b) women with better education are more likely to seek employment outside the low-paying traditional occupations (e.g., agriculture sector);[465] and c) educated female workers tend to have better occupational attainment levels compared to male workers.

Table 22. Estimation of Return to Education by Gender-based on Model 1.1 in Equation 2

	Male	Female		
Number of Observations	6010	2117		
Prob > F	0.00	0.00		
R-squared	0.10	0.12		
	Male		**Female**	
Log of Income	**Coefficient**	**t-value**	**Coefficient**	**t-value**
Explanatory Variable				
Years of Schooling	0.057	21.71	0.065	15.54
Years of Work Experience	0.017	2.19	-0.033	-2.450
Years of Work Experience Squared	0.001	0.87	0.005	4.290
Constant	9.364	504.12	9.02	310.770

6.3.3 Model 1.2: Average Return to TVET Education

Workers could complement their formal education with TVET training to gain a specialized skill that is suited for a sector and to increase the likelihood of promotion. Model 1.2 augments the first model to estimate a separate return to TVET training. Table 23 shows that workers that availed of a six-month TVET training earned a statistically significant wage premium of 7.7 percent (the sum of the parameters associated with years of schooling and the TVET dummy variable) or an incremental contribution of TVET training of 0.68 percent to the average return to education. This incremental wage premium translates to a 1.6 percent internal rate of return, which is below the 12 percent cost of capital in Nepal.

[465] Dougherty, C. (2005). Why Are the Returns to Schooling Higher for Women than for Men? The Journal of Human Resources. Retrieved from: https://www.jstor.org/stable/4129547?seq=1

Table 23. Estimation of Return to TVET Training Based on Model 1.2 in Equation 3

Number of Observations	8,127			
F (4, 8122)	242			
Prob > F	0.00			
R-squared	0.11			
Log of Income	Coefficient	Std Error	t-value	Prob > |t|
Explanatory Variable				
Years of Schooling	0.061	0.002	24.98	0.000
TVET	0.007	0.003	2.00	0.046
Years of Work Experience	0.007	0.007	0.99	0.323
Years of Work Experience Squared	0.002	0.001	2.71	0.007
Constant	9.248	0.016	563.24	0.000

Source: Study estimates.

6.3.4 Model 2: Marginal Return Across the Education Level

Model 2 relaxes the assumption of a fixed return to education by allowing the return to education to vary depending on the education level (i.e., marginal return to education). Table 24 shows the estimation results and the marginal return to education that was separately calculated using equation 5. The study incorporated the parameter associated with illiterate workers as part of the intercept (constant) of the model to avoid statistical estimation issues. All estimates for the remaining education levels showed statistical significance, except for the early childhood education level. The study shows that workers with a master's degree earned the highest wage premium of 15 percent. In contrast, workers with basic and secondary education levels experienced a negative wage premium (or wage discount) of - 4 percent and -1 percent, respectively. The negative returns to education for workers with an educational attainment below secondary education suggest that those workers must have been employed in sectors with broad skills requirement such that educational attainment is not the most important determining factor in job assignments, wages and wage premia. These sectors may include agriculture, manufacturing, construction, and wholesale and retail trade, and accommodation and food service activities, which employs 7 of 10 workers in Nepal. The wide variations in the marginal return to education, ranging from -0.13 percent to 15 percent, suggests that the assumption in Model 1 of a fixed return to schooling across educational level is too restrictive. Of the 10 education levels, only the return to education at the bachelor's (10 percent) and master's (15 percent) levels exceeded the average return to education (6.1 percent) by a large margin. However, the 10 percent return to education at the bachelor's level only translates to an internal rate of return of 11.1 percent, which still falls just below the 12 percent cost of capital in Nepal. Only the master's degree return to education of 15 percent reaches an internal rate of return of 14.8 percent, which exceeds the 12 percent cost of capital in Nepal, thereby making such investment in education a profitable financial proposition. This further corroborates the findings that

marginal return is highest for a higher level of studies at 13 percent, followed by primary at 6 percent and secondary at 4 percent.[466]

The study compared the return to education with earlier estimates[467] and found that marginal return increased from 13 percent to 15 percent for higher levels of education. In contrast, the return to education for primary and secondary levels decreased over the years to a point where workers with secondary education already earns a negative wage premium. The stronger return to education for workers with higher levels of education may mirror the differential development of various sectors in the economy. The weaker return to education for workers with lower levels of education reflects the lack of development of sectors in the economy that demand lower-skilled workers, such as the agriculture, light manufacturing, construction, and the hotel and food service sectors. On the other hand, the stronger return to education for workers with a higher level of education reflects the accelerated development of sectors in the economy that demand mid- to high-skilled workers, such as the information and communication technology sector (ICT), financial sector, and the tourism sector. Furthermore, the increasing access to computers with an internet connection has improved the quality of education service experienced by graduates of tertiary and post-graduate programs and may have raised the wage premium.[468]

Table 24. Estimation of Cumulative and Marginal Return to Education Based on Model 2 in Equation 4

[466] Akanda, A. S. (2010). Returns to Education in Nepal: Evidence from Living Standard Survey. Dhaka Univ. J. Sci.
[467] Ibid.
[468] Alberto Lemma, G. H. (2017). The Nepal Labour Market: A Four Sector Case Study. Retrieved from: https://set.odi.org/wp-content/uploads/2017/10/2.-SET-Nepal-The-Labour-Market-4-sector-case-study_Oct-2017-1.pdf

Number of Observations	8,127		
F (11, 8115)	126		
Prob > F	0.00		
R-squared	0.15		
Log of Income	Coefficient	t-value	Marginal Return
Explanatory Variable			
Constant (Illiterate)	9.317	570.66	
Early Childhood Education	0.149	1.09	4.80%
Literate	0.143	3.95	-0.13%
Lower Basic	0.267	15.98	1.71%
Basic	0.219	7.92	-4.00%
Lower Secondary	0.205	11.29	-1.00%
Secondary	0.197	9.8	-0.50%
Bachelor	0.498	22.94	10.00%
Master	0.790	27.84	15.00%
Professional Degree	0.963	5.78	4.50%
Years of Work Experience	0.002	0.41	
Years of Work Experience Squared	0.002	3.11	

Source: Study estimates.

6.3.5 Model 3: Average Return to Education Based on Quality

Model 1 estimated an average return to education with the assumption that respondents experienced the same quality of education services. Model 3 augments the first model to estimate a return to quality-adjusted education. In this case, following Bitlagy (2012), the study used respondents' access to a computer with an internet connection as a proxy for a quality education service experience. Table 25 shows that workers with better quality education service experience, as measured by this proxy, earned a statistically significant wage premium of 8.3 percent (the sum of the parameters associated with years of schooling and the quality proxy dummy variable), or an incremental contribution of education quality factor of 2.2 percentage points to the average return to education. The 8.3 percent wage premium translates to an 8.8 percent internal rate of return, which still fails to surpass the 12 percent cost of capital in Nepal. Studies in other countries found that return to education is significantly affected by the quality of the education experience (e.g., access to better infrastructure, more teacher time, and low student-teacher ratio, etc.),[469] such that graduates from better quality schools earned significantly higher income compared to graduates from low-quality schools.

[469] Edwards, A. S. (2002). The impact of school quality on earnings and educational returns—evidence from a low-income country. Journal of Development Economics. Retrieved from: https://www.sciencedirect.com/science/article/abs/pii/S030438780200010X?via%3Dihub.

Table 25. Estimation of Return to Quality Adjusted Education Based on Model 3 in Equation 6

Number of Observations	8,127			
F (4, 8122)	271			
Prob > F	0.00			
R-squared	0.12			
Log of Income	**Coefficient**	**Std Error**	**t-value**	**Prob > |t|**
Explanatory Variable				
Years of Schooling	0.052	0.002	20.98	0.000
Quality Proxy	0.031	0.003	10.98	0.000
Years of Work Experience	0.007	0.007	0.93	0.354
Years of Work Experience Squared	0.002	0.001	2.65	0.008
Constant	9.275	0.017	562.05	0.000

Source: Study estimates.

6.3.6 Quality of Education in Nepal

The GON increased its budget allocation in education every year; however, the improvements in general school performance have fallen short of GON expectations.[470] The literature cites several factors for the lack of improvements in quality in Nepal's education system. One reason points to the failure of schools to balance theoretical knowledge with practical skills that are directly applicable in the job market. Schools fail to update the curricula to reflect global developments in various fields of specialization. Another reason is the lack of monitoring mechanisms in Nepal's school system. Such mechanisms could help establish a robust accountability system by providing information that empowers the active participation of students, relevant GON entities, parents, and education professionals in improving the country's quality of education.

6.3.6.1 Equitable Access to Education

A review of the literature showed that poor and marginalized students drop out of school earlier, such that poor students complete 3.2 fewer years of schooling than their wealthier peers. As expected, poor and marginalized groups have limited opportunities to participate in private schools. Only 6 percent of the students from marginalized communities attend private schools, compared to 60 percent from the wealthiest quintile.[471]

6.3.6.2 Quality of Education (Public-Private Partnership Versus Public vs. Private)

Most researchers[472] in Nepal use the School Leaving Certificate examination (SLC)[473] data to evaluate the country's quality of education. Table 26 compares the passing percentage of SLC graduates from 2011/12 to 2015/16 for three types of school systems, namely schools with public-private partnerships (PPP), public schools (including community schools), and private schools. Schools with PPPs showed a passing percentage of 100 percent over the five years. Private schools followed with a passing rate of 86 percent to 93 percent, while public schools showed the lowest passing rate of 28 percent to 37 percent. This data provides strong anecdotal evidence that private sector involvement in public schools may have a positive impact on the quality of education service experienced by students, leading to higher school performance as measured by the passing percentage of SLC graduates.

Countries adopt various models in providing education services, ranging from purely public provision of education services to one where the private sector plays a more significant role. The literature has shown that the latter model can contribute towards improving the quality of education services as well as in expanding access to such services. However, the model favors students from higher-income

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[470] Chapagain, R., & Bhattarai, a. R. (2017, February 17). Studying abroad. The Kathmandu Post . Retrieved from: https://kathmandupost.com/opinion/2017/02/17/studying-abroad.

[471] SABER Country Report. (2016).

[472] Thapa, A. (2012). Public and private school performance in Nepal: an analysis using the SLC examination. Education Economics. Retrieved from: https://www.researchgate.net/publication/271857200_Public_and_private_school_performance_in_Nepal_an_analysis_using_the_SLC_examination.

[473] SEE (previously termed as SLC) is a 10th grade final examination administered and controlled by Ministry of Education, Nepal.

households.[474] In the case of Nepal, the private sector actively participates in the provision of education services, but three key constraining factors have impeded its investments.

Table 26: School Leaving Certificate (SLC) Level Pass Rates

Year (A.D.)	Public-Private Partnership (in percentage)[475]	Public Schools (in percentage)[476]	Private Schools (in percentage)[477]
2011/12	100	36.87	85.77
2012/13	100	28.42	87.03
2013/14	100	29.76	89.06
2014/15	100	28	93
2015/16	100	33.51	89.81

Source: Author's computation based on the data from the Ministry of Education Science and Technology and Samriddhi Foundation.

- ***Low return to investment*:** Profits drive the private sector in any investment, including in education. The private sector lacks financial incentives to expand investment in public education through the PPP arrangement. [478] The private sector expects a low return on this type of investment compared to the return from regular private schools. For example, private schools can charge almost 50 percent more in school fees than public schools with a PPP. Public schools need to comply with public school management guidelines and cannot set fees arbitrarily. Under this restrictive environment, the private sector will see minimal opportunities to expand the PPP model in providing education services in Nepal [479]
- ***High barriers to entry in the education sector:*** Although the GON's regulatory framework aims to promote competition,[480] the education sector still suffers from stakeholders' anti-competitive practices. For example, private school associations like the Private and Boarding Schools' Organization Nepal (PABSON) and National Private and Boarding School Organization

[474] Stover, O. L., & Patronis, a. H. (2015). Education for all: the private sector can contribute . The World bank Group . Retrieved from: https://blog.private-sector-and-development.com/2015/04/06/education-for-all-the-private-sector-can-contribute/?output=pdf

[475] To calculate the pass percentage for the schools under PPP, we calculated the average pass percentage of Gandaki Boarding School (Pokhara, Kaski) Nava Jivan Secondary School (Jutpani, Sarlahi) and Balmandir secondary school (Lumle, Kaski), Kuleshwor Madhyamic Vidyalaya (Kuleshowr) and Budanilkantha School (Budanilkantha). The name of the schools and contact persons were provided by the expert and according to the expert there are only 8 schools in the entire country operating under PPP model. Telephonic enquiry with the chief of respective schools was conducted to obtain the information.

[476] Information for public schools are taken from a report called "Cost of Public Education – An Assessment of Basic Education" by Samriddhi Foundation, and "Education in Figures 2017 (At A Glance)" by the Ministry of Education, Science & Technology. As per Education in Figures 2017 (At A Glance) there are 29,035 public schools and 6,566 private schools providing higher secondary education.

[477] Ibid.

[478] UN. (2019, April 7). UN Meetings Coverage and Press Release . Retrieved from https://www.un.org/press/en/2019/ecosoc6975.doc.htm

[479] Nepal Economic Forum . (2019). Cartel in Education . Nepal Economic Forum. (report yet to be published)

[480] The regulatory aspects of anti-competitive practices in Nepal are defined under Competition Promotion and Market Promotion act (2006).

(NPABSON) exercise veto authority over new projects in the sector. A private entity interested in investing in a public-school needs approval from the parent association. Such approval process could be intentionally subjected to onerous requirements and complicated processes to serve as a barrier to entry against potential competitors in the market.

- ***The politicization of stakeholders:*** In Nepal, politicians, and businesspeople engage in rent-seeking activities, including in the private education sector. The owners of private schools hold multiple board positions in organizations PABSON and NPABSON. Some were appointed or elected as members of parliament.[481] With the concentration of political influence in the hands of existing private school owners, public policies on education reflect their narrow interest and not advance a more effective and efficient public and private education system in Nepal.

6.3.6.3 Market Perception of Public Schools

Public schools in Nepal suffer from poor infrastructure, low-quality teachers, weak regulations, and low graduation rates.[482] This has impeded private investment in public schools, as private investors prefer a parallel private education system instead. In addition, parents also prefer private schools for their children, over public education, although they tend to be expensive compared to public schools. According to the MOE, the growth in enrollment in private schools more than doubled at all levels, from 6 percent to 15.3 percent at the primary level, 7.6 percent to 16.2 percent at the lower secondary level, and 9.7 percent to 19.3 percent at the secondary level for 2005 and 2015.[483] Likewise, the passing rates of private school students in the SLC examinations, for instance, is much higher at almost 90 percent in 2015, compared to 34 percent in public schools.[484]

6.3.6.4 Quality of TVET Education in Nepal

TVET is a technical school program aimed at providing technical and skilled human resources based on the labor demand of the market. TVET education began in Nepal with the establishment of the Council for Technical Education and Vocational Trainings in 1989, which now provides training for 60,000 students every year.[485] Despite nearly four decades of its existence, the delivery of quality TVET education is still an issue.[486] Research from ADB claims that TVET could play an important role in transforming Nepal's human resources into productive assets as it aims to provide technical knowledge

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[481] Ibid.
[482] Thapa, A. (2012). Public and private school performance in Nepal: an analysis using the SLC examination. Education Economics. Retreived from: https://www.researchgate.net/publication/271857200_Public_and_private_school_performance_in_Nepal_an_analysis_using_the_SLC_examination
[483] Bhatta, P., & Pherali, a. T. (2017). Nepal: Patterns of Privatisation in Education A case study of low-fee private schools and private chain schools. Educational International Reseasrch. Retreived from: https://download.ei-ie.org/Docs/WebDepot/Research_Nepal_final.pdf..
[484] WENR. (2018, April 3). Education in Nepal. Retrieved from https://wenr.wes.org/2018/04/education-in-nepal.
[485] Wagle P.R. (2019). Role of Technical and Vocational Education in Nepali Skill and Labor Landscape. Nefport. Nepal Economic Forum. Retrieved from: https://nepaleconomicforum.org/portfolio/nefport-issue-36/.
[486] Gaihre, N. K. (2017). Technical and vocational education and training system in Nepal. LOKTANTRA. Retreived from: http://english.lokaantar.com/articles/technical-vocational-education-training-tvet-system-nepal/..

based on the demand of the economy. Nevertheless, due to constraining factors, such as weak institutional capacity and low relevance of curricula, the country is unable to effectively link TVET training with the needs of the labor market.[487]

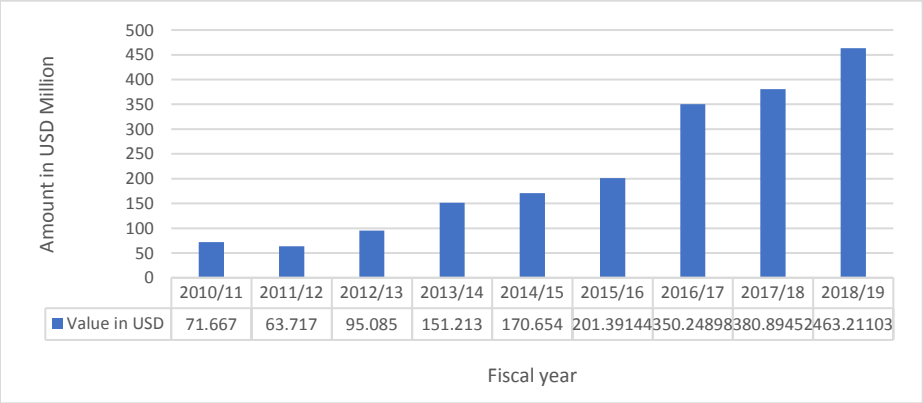
6.3.6.5 Education Services Outsourced to Foreign Providers

Market evidence points to an increasing willingness of some Nepalis to pay for better education services. For example, the rate of growth in enrollment doubled across all levels in 2015 compared to 2005. Furthermore, an increasing number of Nepali students were issued a No Objection Certificate by the Ministry of Education to study abroad, including in the United States, Australia, New Zealand, the United Kingdom, and Canada. In 2018, 84,700 Nepalis studied abroad, 76 percent of which originated from urban areas of Nepal.[488] Out of these, 7 percent of migrants completed a university level of education, 45 percent completed high school or professional/vocational education. Figure 40 shows that Nepali students' willingness to pay for outsourced education services from foreign providers increased from $72 million to $463 million in less than 10 years or a 68 percent increase annually. The expenditure in 2018/19 represented an equivalent of 33 percent of the entire GON budget for education in Nepal.

These Nepali students pursue higher education abroad as it increases the likelihood of employment abroad as well as earns them a higher return on education investment. For example, education and employment in Nepal provide a return to education of only 6.1 percent, while the same investment abroad receives double the rate of return of around 12 percent. Several studies support the economic drivers behind this trend. A study by Beghin and Park (2019) on "The Exports of Higher Education Services from OECD Countries to Asian Countries," which includes Nepal, found that wages (among others) in host countries strongly influenced the enrollment of Asian students in OECD universities. That is, a 1 percent increase in the wage rate in host countries increases the enrollment of Asian students in those countries by 2 percent to 6 percent.

[487] ADB. (2017). Innovative Strategies for Accelerated Human Resource Development in South Asia. Asain Development Bank. Retrieved from: https://www.adb.org/sites/default/files/publication/385661/ppp-education-sa.pdf
[488] Zwager, N. d., & Sintov, a. R. (2017). Maximizing the Development Impact of Migration in Nepal. IIDS. Retrieved from: http://www.iids.org.np/sites/default/files/doc_publication/Maximizing%20the%20Development%20impact%20of%20Migration%20in%20Nepal%20-%20Comprehensive%20Market%20Study%20%E2%80%93%202017_0.pdf

Figure 40: Cost of Education Services Outsourced to Foreign Providers



Source: Nepal Rastra Bank (2019).

6.4 CONCLUSIONS AND RECOMMENDATIONS

6.4.1 Conclusions

This sub-study aimed to assess the strength of the demand for schooling in Nepal by estimating the return to education, as measured by the wage premium received by workers who stay longer in school. Nepal's return to education has remained low for more than two decades, since it was first estimated in 1998, and has reached a record low in the study's current estimate of 6.1 percent. This rate of a wage premium for a person's working life translates to an internal rate of return of only 7.9 percent, which fails to surpass the 12 percent cost of capital in Nepal, thereby making the investment to stay one more year in school an unprofitable financial proposition on average. Nepal's lack of market opportunities and weak domestic economy have depressed the returns to education, lowering somewhat Nepali workers' incentive to complete their education and increase the incentive to move abroad for work. As a result, worker productivity has suffered.

Although all Nepali workers faced low returns to education, male workers ranked slightly lower than their female counterparts in the labor market, as the latter earned 2 percentage points more in wage premium for education. The study also examined the impact of enhanced quality in education service as well as additional specialized skills training through TVET. Although the quality in education service and specialized skills training provide an incremental increase in the return to education by 2.2 and 1.6 percentage points, such increases, however, still fall below Nepal's 12 percent cost of capital.

However, the study found that marginal return to education accelerates significantly after the secondary level of education, such that the marginal return to education exceeded the average rate among workers with a bachelor's and a master's degree. In fact, an investment in a master's degree provides a 15 percent internal rate of return, which is above the cost of capital, thereby making it a profitable financial proposition.

While Nepal's depressed returns to education has generally weakened workers' propensity to acquire tertiary education in the country, a segment of the population has revealed a strong willingness to pay for outsourced education services from foreign providers. Household expenditure for this purpose reached $470 million in 2018/19, which represents more than a third of the GON's entire budget for the education sector. This represents an opportunity for Nepal to regain this lost expenditure in tertiary education.

Anecdotal evidence shows that private investment in public education may improve school and student performance significantly. Still, such investments were constrained by limited profit opportunities in public schools to attract private investment. Furthermore, new investors face a high barrier to entry that is erected by well-connected owners of existing schools who may perceive new entrants as a competitor and market threat.

Improving the quality of education would impact both the supply and demand sides of the market. On the supply side, Nepal's 12.2 years average year of schooling is equivalent to only 6.9 years when adjusted for quality. This suggests that the GON spends two years of budget to gain one year of quality-

adjusted schooling. Improving the quality of education would make investments in education more effective and efficient. On the demand side, even under a depressed return to education in Nepal, the study estimated that the return to education increases by 2.2 percentage points, based on a proxy that represents quality education in the Mincer Equation model.

6.4.2 Recommendations

To ensure that investments in education contribute to accelerating economic growth, development stakeholders in Nepal may consider the following set of recommendations.

Economic activities and entrepreneurship development: Established empirical evidence shows that an increase in access to education services does not result in the expected productivity gains that drive long-term economic growth if the business sector does not demand the skills that they produce. For this reason, investments for more schools, more teachers, more textbooks, and more access to all three should be jointly undertaken with reforms to improve Nepal's investment climate and ease of doing business environment to stimulate entrepreneurship and enterprise development. Specific reforms that development partners may consider promoting involve opening the education sector to foreign foundations and universities that will allow knowledge transfer and improve access to foreign technology. Development partners also can conduct deep dive sectoral studies to identify the potential areas of engagement to stimulate entrepreneurship development and areas to promote within TVET training.

Quality of education: Based on the research presented in this sub-study, one way to improve quality of education would be for the GON to enhance ICT facilities in schools, such as providing multimedia equipment and computers with an internet connection that will allow innovative education service delivery modalities, including online learning. In remote communities, better infrastructure must be developed to access electricity. Other basic services that form essential components for education quality, range from increasing time on task to improved student-teacher ratios. Another example suggested by this study to improve the quality of education is strengthening monitoring mechanisms that empower parents and other stakeholders through the provision of regular information by schools about their quality. Quality of education can be enhanced effectively by regularly updating the curriculum to incorporate global trends in educational curriculum and methodology.

The demand for foreign study suggests development partners can support the local tertiary and secondary education institutions by initiating collaborations with international universities to develop curricula that meet the current need of industries, especially ones related to products and services for which Nepal holds a comparative advantage. Similarly, development partners also can contribute by providing financial and technical support for the enhancement of ICT in the education system. Efforts to improve the overall level of education in Nepal will contribute to improving workforce skills, as demand-side efforts increase the probability that Nepali graduates remain in Nepal and strengthen Nepal's workforce and human resources.

Strengthen the public-private partnership: When properly channeled, the investment of private funds can boost the quality of education.[489] Thus, one of the strategic interventions to improve the quality of formal and technical education in Nepal is to implement a PPP model. It will help optimize the existing resources as the public sector could play the role of enabler and facilitator, and the private sector could contribute its expertise, technology, and management. This model may be best applied in the case of TVET, where the private sector and government can work together to revise and periodically update curricula based on the demand of the labor market, as well as support graduates in securing jobs locally and abroad. Additionally, the private-public partnership requires changes in regulatory frameworks that hamper effective operation and as well as a different set of incentives to be financially rewarding. As such, government and development partners can work together to introduce programs, such as matching funds, tax breaks, and long-term land leases, and find a comprehensive solution to strengthening public-private partnerships. The development partners can share lessons learned from other countries and adapt them to the Nepali context. Existing models that engage in education spaces, such as Karkhana,[490] might be supported to scale-up their operations.

Non-politicization of the education sector: Political interference in the education sector should be curtailed through the introduction of laws that prevent individuals from holding multiple positions[491] that promote political interference. The utility of institutions, such as PABSON and NPABSON, need to be examined, and the regulatory process needs to be more inclusive and not ceded to private sector associations that are controlled by representatives with strong political connections. This is a promising area of intervention for development partners, as it will mean working with the government to ensure a better and stronger regulatory environment through a more inclusive policy formulation structure and process.

Encourage equity in education for vulnerable communities and women: Marginalized communities need to participate in the education system given that findings indicate that poor and marginalized students drop out earlier than their non-poor counterparts.[492] Access to education should be improved by allocating merit-based scholarships to vulnerable communities, as well as increase the access of marginal groups to private schools.[493] The government may explore providing incentives, like tax rebates or cash incentives, to private schools with innovative and effective approaches to increase the number of marginalized students and to improve their performance.

Multiple international agencies are already working on these issues in Nepal. In this regard, a stocktaking and mapping exercise would help identify which agencies and organizations are engaged and identify gaps

[489] Wong, J. (2019, September 17). How private investment can boost education access and quality in the digital economy. World Economic Forum . Retrieved from: https://www.weforum.org/agenda/2019/09/how-private-investment-can-boost-education-access-and-quality-in-the-digital-economy/.
[490] https://karkhana.asia/
[491] The research shows that due to political aspiration, chairperson aims to hold multiple position including member of parliament.
[492] SABER Country Report. (2016).
[493] As per the report (Engaging the Private Sector in Education, 2016), the enrollment of vulnerable communities to private school is 6 percent.

that may exist. After that, appropriate programs and interventions could be developed to close any gaps identified in the stocktaking and mapping exercise.

Better match of workforce skills and job market requirement: Even with a depressed return to education due to weak demand from the business sector, the labor market can still improve the efficiency of matching workforce skills and job market requirements. This can be achieved through mechanisms and platforms that will better coordinate the supply and demand for specific skills in the market. For example, schools can include a private-sector advisory body to inform school administrators, teachers, and students on employment trends. Schools also can create career advice and job placement offices that can guide students as they make important career decisions. This can include offering internship opportunities for students early in their school programs to gain practical knowledge and help them reach informed career decisions. Development partners also can undertake efforts to improve linkages between schools and businesses that are looking for employees by skills when they graduate. Development partners can undertake national technical skills assessments periodically to help stakeholders identify additional prospective skills to promote that are tailored to urban and rural contexts.

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APPENDICES

Appendix 1: Statement of Work

USAID Study/Assessment/Evaluation
PSE Assessment Statement of Work

1. STATEMENT OF WORK

1.1 Background

USAID/Nepal conducts periodic assessments to track shifts in the operating context for strategies and programs implemented by USAID and its partners. The current Country Development Cooperation Strategy (CDCS) expires in 2020, and USAID/Nepal will draft a new strategy in the coming months. Given the Agency's renewed emphasis to deepen partnerships with the private sector and the GON's efforts to increase the private sector's role in the economy, USAID/Nepal seeks to assess opportunities for private sector engagement to provide market-based solutions to Nepal's development problems, in an effort to support strategy and program design.

As part of its 2014-2020 CDCS, USAID/Nepal set the overarching goal of fostering a more democratic, prosperous, and resilient Nepal. More specifically, the Mission asserted that if selected institutions become more effective at delivering services, more adept at engaging citizens—and more responsive to their needs—and if communities' economic, environmental and human capacity are strengthened, then Nepal will become more democratic, prosperous, and resilient.

USAID/Nepal anticipated significant contextual changes during the period of its current CDCS. In its CDCS, USAID/Nepal acknowledged that the last five years had the potential to re-craft the political, social, and economic institutions that can propel its development in unprecedented ways. Nepal's position between two economic giants, India and China, present opportunities for economic growth, and with Nepal's development strides over the past 25 years, it could serve as a global example for sustaining health, education, and agricultural gains. In anticipation of the new constitution, USAID/Nepal predicted that the efforts to redefine Nepal's administrative structure along federal lines would open up new opportunities to promote local commerce, good governance and resource management, and improved health and education service delivery.

Many of these predictions held true: since 2014, Nepal has experienced significant changes in its political, economic and civil society structures and status. The country suffered a massive earthquake in 2015 that cost more than 8,000 lives, 800,000 homes, and significant damage to infrastructure and services for Nepalis - it also halted, and then spurred economic growth between 2015 and 2017. The border blockage with India in 2015-2016 also highlighted its vulnerability within the region, as well as its dependence on neighbors. And the new constitution signed in 2015, and the subsequent roll out of federalism with a new governance structure formed consisting of 7 provinces, 77 districts, and 753 local government units (including 6 metropolises, 11 sub-metropolises, 276 municipalities and 460 rural municipalities), led to administrative challenges at multiple levels that have affected many types of service delivery. Continued population shifts, urbanization and out-migration, coupled with remittances, have

continued to shift the socio-economic status and structures of Nepal families, as well as geographic and social disparities.

Over the past five years, USAID/Nepal focused on improving the government's inclusion of traditionally marginalized populations in decision making and services, channeling political competition and conflict through democratic institutions, and ensuring Nepalis' increased civic and political freedoms. Prosperity encompasses a range of economic and social factors, from increased livelihoods to improved individual health and better education. The risk of shocks—climatic, seismic, economic, health—and other threats to the country, communities, and individual households, will always be present in Nepal. An improved socioeconomic status could serve as a social safety net, helping households recover more quickly from shocks.

From 2020, USAID's overarching goal for the development of Nepal is to continue to support efforts that build self-reliance. USAID considers self-reliance as a country's commitment and capacity to self-sustain political stability, social equality, and economic growth. Broadly, commitment and capacity are measured through a set of indicators that look at, (1) the degree to which a country's laws, policies, actions and informal governance mechanisms (cultures and norms) support progress toward self-reliance; and, (2) how far a country has come in its ability to manage its own development journey across the dimensions of political, social and economic development, including the ability to work across these sectors. See Annex A for USAID's Nepal Country Roadmap for Self-Reliance, and background information on USAID's website (https://selfreliance.usaid.gov/country/nepal).

The new USAID Policy Framework recognizes, based on overwhelming empirical evidence, that private enterprise is one of the most-powerful forces for lifting lives, strengthening communities, and accelerating countries to self-reliance. Hence, the new PSE Policy calls Missions to consider the potential role of the private sector in providing market-based solution every time it approaches a development issue. At the same time, the GON aims to increase the role of the private sector in the economy, thereby expanding the space for co-creation of market-based solutions with the private sector. For example, in the recently concluded Nepal Investment Summit 2019, the GON revealed that the country needs $18 billion annually over the next five years, to achieve its ambitious goal of reaching middle-income status by 2030. With the country receiving only $7 billion in workers' remittances, $1 billion in official development assistance, and $0.2 billion in FDI, the GON invited foreign investors to help bridge Nepal's financing gap by investing in Nepal. The GON assured investors that policy and regulatory frameworks are already in place to protect their investments and their ability to repatriate profits to their home countries.

USAID/Nepal seeks to assess the current context to inform future strategies and programs. Broadly, USAID/Nepal is looking to assess the current role of the private sector in the economy and identify existing opportunities to engage with the private sector, to leverage private enterprise resources and expertise to achieve effective and sustainable development outcomes at a scale that matches Nepal's development challenge.

1.2 The Purpose of the Study

In an ideal world, development problems are articulated in the market in the form of effective demand (that is, end-users are willing to pay for standard drugs and quality health services to promote better health, for standard construction materials to reduce disaster risk, for improved seeds and fertilizer to

increase income and reduce poverty, for quality education to increase the likelihood for employment and to earn a premium wage). The private sector, desiring to earn profit, will invest to produce products and services that meet those demands, and as a result, allow the market to routinely provide solutions to those development problems. In the real world, however, the private sector often holds back on their investments due to a host of factors, including high cost (e.g., initial capital cost and transaction cost), low return (e.g., low productivity), and uncertainty on their ability to appropriate returns (e.g., high risk from inflation, devaluation, and corruption). As a result, the market's ability to provide solutions is impeded and development problems remain unresolved.

The purpose of this study is to a) identify opportunities to engage with the private sector by assessing investment opportunities that could address development challenges; b) identify constraints that impede those investments by the private sector; and c) to map the roles USAID can potentially play to alleviate or eliminate those constraints. USAID/Nepal will apply these findings for strategic planning, in support of the great goal of setting Nepal on a path toward self-reliance.

1.3 Study Questions

To facilitate an intentional shift in the new CDCS to adopt market-based approaches as a means to accelerate Nepal's progress on the Journey to Self-Reliance, the PSE study must answer the general questions called for in the new PSE Policy, as specified below.

General Questions:

- What factors are constraining the private sector from involvement and investment to address Nepal's development challenges in the following sectors – social, environmental and economic growth, health, education, democracy and governance, and disaster risk management?
- What role can USAID play to help alleviate or eliminate these constraints?
- How can the interest of vulnerable communities be better served through market-based approaches?

Specific Questions:

The above general questions are translated at the sector level, as follows:

Social, Environmental and Economic Development Sector

- What factors hamper the ability of the agriculture value chain to provide price competitive products in the domestic market, which resulted in the significant growth of agricultural imports over the last decade?
- What areas of reforms and their combinations, such as in labor productivity, power and transport costs, tariffs, trade facilitation services, exchange rate, can address those factors and improve the agriculture value chain's cost competitiveness in the domestic market and incentivize investment? How can these reforms be initiated and accelerated?

- How can Nepal expand the role of exports (merchandise and services) to incentivize investment and drive economic growth?

- What market approaches to natural resource management (e.g., market for ecosystem services and tradable land, water, and pollution rights) have the potential to work in Nepal? What factors hamper the development of those market approaches to improve natural resource management?

Specific Question for Health Sector

- What factors impede investments in the health sector supply chain that created gaps in providing standard drugs and quality health services in the market, at the right quantity, place, time, and price? Does GON investment in health services crowd-out private sector investment?

- What hinders the development and widespread use of financial and insurance products that improve access to good quality health products and services?

Specific Question for Education Sector

- Is private return to education (i.e., wage/salary premium a Nepali receives from local and foreign employment by staying longer in school) remunerative enough to support an effective demand and incentivize private sector investment to expand and improve the quality of a) public education services (pre-primary - grade 12 and TVET) and b) private education services (pre-primary - grade 12 and TVET) ?

- Are there opportunities for private sector participation and investment to expand equitable access to quality education, especially in the public school system (e.g., investment to support the public school system - with particular focus on primary grades and TVET, and investment to promote finance and delivery innovations). What factors impede those investments?

Specific Question for Disaster Risk Management

- What factors impede investments in the construction material supply chain that created gaps in providing standard construction materials in the market, at the right quantity, place, time, and price?

- What hinders the development and widespread use of financial and insurance products that reduce disaster risk and improve people's ability to recover from disaster events that damage homes and public buildings?

Specific Question for Democracy and Governance

- Does the existing GON policy formulation process provide formal opportunities for the private sector to systematically contribute to policies? What hinders the private sector from engaging in

proactive advocacy for pro-growth, business-friendly, and accountable governance policy reforms?

- Does the private sector have the capacity to effectively advocate for policy reforms? What policies does the private sector see as priorities for creating a favorable enabling environment? Are these in line with GON priorities?

- What opportunities exist for the private sector to facilitate (e.g., one-stop-shop) public services for the business community?

- What factors discourage or limit the ability of private sector actors in reaching out to vulnerable communities? How can development programs incentivize private sector to benefit those communities?

1.4 Methodology

The CDCS PSE Assessment Team will procure through MEL the services of consulting firms / think tanks / research institutes to conduct the PSE study. The contracted entity is expected to organize a team of experts to implement the study and adequately answer the study questions. The study team will work closely with USAID's assessment team to develop five detailed methodologies for the analysis, including: 1) for assessing factors constraining investment using an Hausmann-Rodrik-Velasco (HRV) Growth Diagnostics - type methodology that is retrofitted for application as a framework for analysis at the sector level in Nepal; 2) for analyzing export opportunity using a two-way matrix categorizing export products (defined at the 6-digit HS - Harmonized Commodity Description and Coding System - commodity level of data disaggregation) based on their comparative advantage (with or without) and condition of the world market (expanding or shrinking trend); 3) for analyzing agricultural value chain cost structures and price competitiveness using CIF import price-to-FOB export price ratios at relevant markets; 4) for estimating the returns to education using Mincer Equation with quality adjusted years of schooling data; and 5) for analyzing gaps in health products and services supply chain and construction materials supply chain using a Structure-Conduct-Performance Framework. These methodologies are described in general terms below, and the study team is expected to flesh them out for suitable application in this study.

Hausmann-Rodrik-Velasco (HRV) Growth Diagnostics (GD) - type methodology

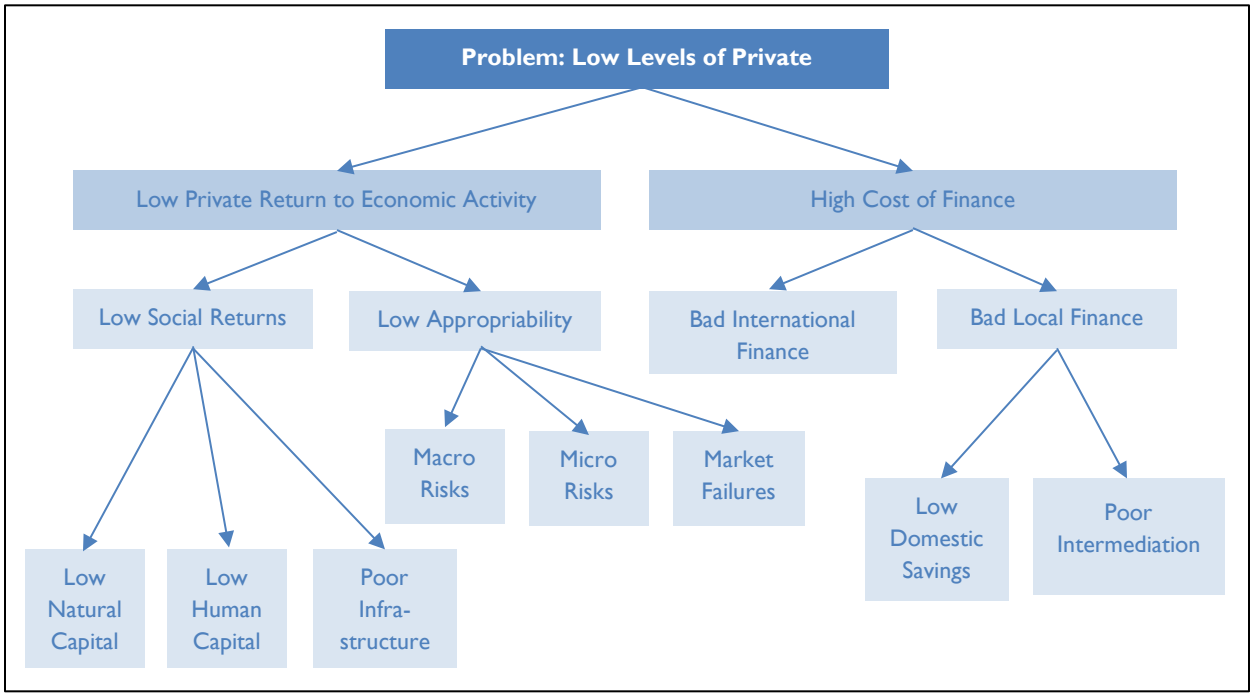
The overarching theme of the study is on private sector investments that address development problems and the factors that impede their realization. HRV developed the GD model to identify binding constraints to investment, but most of its applications have been at the macro economy level. The PSE study team shall retrofit the GD model and apply it as a general framework to examine constraints to investment at the sector level in Nepal.

The GD model provides a good general framework to examine constraints to investment because it includes the universe of factors that influence investment and is based on an economic model with optimized behavior of households, firms, and government. These factors are categorized into one of two logical categories: cost of finance and returns to investment. These categories are then organized in a decision tree structure (figure 1) that naturally lends to a logical and sequential assessment of bindingness. Each node along the decision tree is assessed and a determination is made as to whether or

not it poses a binding constraint to investment. For example, at the highest node of the decision tree, the first assessment of bindingness between the cost of finance and private returns corresponds to a realistic investment decision problem faced by actual investors. That is, investors will restrict their activities either because the cost of finance is too high or because the private returns to investment are too low. If returns are identified as the binding factor, then the next level of assessment is to determine why investors are unable to earn or retain adequate returns. One reason is that social returns to factors of production, such as returns from natural capital, human capital, or infrastructure, may be low. Alternatively, there may be a high risk associated with the ability to retain or appropriate returns because of macroeconomic or microeconomic policy and regulatory risks.

For the application of the GD model as a framework at the sectoral level, the study team may consider the following adjustments; a) focus on sector-specific cost of finance issues, b) include a more detailed set of inputs that are relevant to the sector, and c) examine sector-specific macro and microeconomic policy, regulatory and institutional factors that affect the ability of private investors to appropriate returns.

Figure 1. HRV Growth Diagnostic Decision Tree



A node along the growth diagnostic decision tree is determined to be a binding constraint when there is a preponderance of evidence demonstrating conclusively that one or more of the following four tests results in a positive finding:

- The (shadow) price of the constraint is high.
- Movements in the constraint produce significant movements in the objective.
- Agents in the economy attempt to overcome or bypass the constraint.

- Agents less intensive in the binding constraints are more likely to survive and thrive, and vice versa.

The first two tests are direct market assessments of bindingness of a constraint. When the price of a factor is high, examining the quantity of the factor supplied helps to determine why the factor is constrained. For instance, a high price with a low quantity suggests that a factor is binding due to weak supply. Alternatively, when a high price is coupled with a high quantity, the factor may be binding because of relatively strong demand. The second test can provide an indirect market assessment of bindingness, especially when no direct price is observable. When a factor is binding because of a high price, it is most often the case that a reduction in price is associated with a significant response in the objective function (i.e., investment or growth). Even if market prices are available and used to demonstrate test 1, test 2 can confirm the findings. The third test is based on the adjustment behavior of agents that attempt to overcome and bypass a constraint when the shadow price is high. The fourth test investigates how different economic actors or activities perform after making the adjustments identified in the third test. That is to say, the factors that are not constrained will be utilized by survivors more intensively. Conversely, survivors will use less of the factors that are more constrained. The interrelationship between the four tests is drawn from the economic logic underlying the economic model. That is, agents will likely survive and thrive (test 4) if they are able to successfully overcome and bypass (test 3) factors that command a high price (test 1). These factors command a high price when they produce significant movements of the objective function (test 2).

Data availability to support the analysis may present a challenge in richly applying the GD's four tests at the sector level in Nepal. The study team must exert their best effort to apply the economic principles underlying those tests. At the minimum, the study team must be able to provide an estimate of the cost and return for relevant private sector actors in a sector, as well as make a determination if those returns are at supernormal or normal rates. The study team must also be able to describe how private sector actors have adjusted their business in order to maintain a remunerative operation.

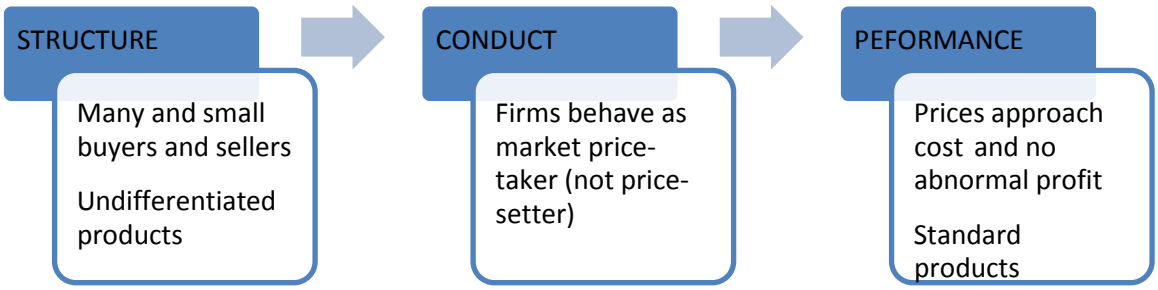
Structure Conduct and Performance (SCP) Framework

The PSE study team shall apply the SCP Framework in analyzing the gaps in the health services and construction material supply chains. The SCP Framework asserts that the structure of a market influences firm behavior, which in turn, determines market performance. Market structure establishes the overall environment within which firms operate. Market structure characteristics may include such elements as number, size, and distribution of buyers and sellers, the type of product exchanged in the market (e.g., commodity or differentiated), policies and regulations, distribution of information, etc. Those market structure characteristics will influence firm conduct in terms of pricing products (e.g., price discrimination), product quality (e.g., product differentiation), product promotion, research and development. In turn, the conduct of firms determines the performance of the market. Market performance characteristics and norms may include such elements as price-cost ratio close to one, product quality meeting certain standard, progressiveness – high rate of introduction of new products, etc. The most common example to illustrate the SCP Framework is the case where there are many, small, and widely distributed buyers and sellers in the market, exchanging undifferentiated products. Under this type of market structure, firms will not be able to set their own prices above market price because of the presence of competitors, and as a result the market structure forces firms to simply take whatever price exist in the market (or firms behave as price-takers). Under this market structure

characteristic and type of firm conduct, the market will produce a performance outcome where buyers pay prices that approach the cost, and as a result firms earn only normal profit rates.

The study team must take a market system as a unit of observation and use the SCP framework to identify gaps in the system and recommend policy and regulatory reforms to incentivize necessary investment and innovation that will enable the health supply chain and the construction supply chain to deliver products in the market that meet desired quality standards.

Figure 2. Market Structure – Conduct – Performance Framework



Export Opportunity Map

Nepal's imports of agricultural products (from H01 to H24) increased by 23% annually from 2010 to 2017. Cereals (H10) increased by 68% annually and contributed the highest share of 31% of the increase in total agricultural imports. Edible vegetables and certain roots and tubers (H07) increased by 35% annually and contributed a 14% share of the increase in total agricultural imports. Animal and vegetable fats and oils (H15, 91% soybean oil) increased by 10% annually and contributed a11% share of the increase in total agricultural imports. The significant growth in imports represents a ready market to incentivize domestic investment, if Nepal can provide those products at competitive prices.

Table 1. Agricultural (H01 to H24) Imports, 2010 to 2017

2-Digit HS Commodities	Annual Increase	Share	Share 4-Digit HS Commodities
(H01 – H24) Agricultural Products	23%		
(H10) Cereals	68%	31%	(1006) Rice 60% (1005) Corn 27% (1001) Wheat and Meslin 12%
(H07) Edible vegetables and certain roots and tubers	35%	14%	(0701) Potatoes 49% (0702) Onions and Garlic 46%
(H11) Animal, vegetable fats and oils, cleavage products	10%	11%	(1507) Soyoil 91%
(H23) Residues, wastes of food industry, animal fodder	28%	9%	(2306) Oilmeals 100%

Countries that have achieved transformative economic growth demonstrate that trade and investment can provide the market dynamics to trigger a country's economic transformation. That is, expanded trade opportunities incentivized investment that increased productivity and improved competitiveness, which in turn, led to further expansion of trade, and resulted in a virtuous cycle for transformative economic growth.

The PSE study team shall develop an export opportunity map to assess the potential of Nepal's current export product mix to incentivize investment and accelerate economic growth. The map is a two-factor matrix that is used to categorize Nepal's exports.[494] One of the factors is the exported product's comparative advantage, which is measured by relative comparative advantage (RCA). The other factor is the world market trend, which is measured by changes in total world exports. The two-factor export opportunity map in Figure 3 classifies export products into four categories. The first are competitive export products in an expanding world market (Optimal). The second are competitive export products in a shrinking world market (Vulnerable). The third are non-competitive export products in an expanding world market (Weak). The fourth are non-competitive products in a shrinking world market (Restructuring). A country with accelerated growth that is fueled by a dynamic export sector will have a larger proportion of its exports under the category with competitive export products in an expanding world market and less proportion under non-competitive export products in a shrinking world market. A dated export opportunity map for Nepal showed a 35.5% share of competitive exports in an expanding market (Malaysia had 73%) and 53.2% share of non-competitive export products in a shrinking export market (ASEAN countries had 2% to 11%). The relatively large share of the latter category (Restructuring) makes it difficult to expand Nepal's exports, and explains the country's growing trade deficit and low long-run trend growth rate.

Using the export opportunity map together with information from existing product space studies (where available), the study team shall develop a strategy to increase the role of exports (merchandise and services) in accelerating investment to drive Nepal's economic growth. This strategy shall identify

[494] This methodology was applied by the World Bank study on "Nepal Trade and Competitiveness Study."

products and sectors with expanding world markets and having the potential to improve their competitiveness. In addition, the study shall identify the policy reforms, investments in infrastructure, adoption of advanced technology, and improvements in workforce competency that will support the strategy to increase the role of exports in Nepal's development.

To develop the export opportunity map, the study team needs to estimate the RCA for each export product. A product's RCA is calculated as the ratio of the share of product ***i*** exports to total exports of country ***j***, to the share of total product ***i*** exports by all countries to total exports of all products by all countries (see Equation [1] below). A product with an RCA that is greater than one suggests that a country has a comparative advantage on those products, and RCA below one means lack of comparative advantage. A product's world market trend is measured by the growth rate of total world exports of that product.

$$RCA_i = \frac{\frac{x_i}{\Sigma_i \quad x_i}}{\frac{\Sigma_{ij} \quad x_{ij}}{\Sigma_j \quad \Sigma_i \quad x_{ij}}} \qquad [1]$$

Figure 3. Export Opportunity Map

Returns to Education: Mincer Equation

Demand for education is a derivative of the demand of firms for skilled labor. Given that very few firms engage in trade or technology transfer with other countries and those that engage in trade are concentrated in a narrow range of agricultural and low-value-added manufactured products, demand for skilled labor in Nepal is considered weak. A weak demand by firms for skilled labor is consistent with the relatively low return to education in the country. Available estimates suggest that an additional year of education provides only an 8.4% premium in workers' salaries, which is below the world average and is in the lower 30% compared to the rest of the countries. In addition, because small enterprises only need low-skilled labor and medium-sized firms that need medium-skilled labor are only a few in the country, the proportion of firms in Nepal that consider finding an educated (skilled) workforce as a major constraint in their operation is only 9% compared to the world average of 18%.

Recent developments, however, point to a strengthening of the demand for education that is driven by transfer income received by households in the form of remittances, as well as by the improved prospects of finding a job abroad. For example, a stronger demand may have exerted pressure on the cost of education to grow faster than the rate of inflation by 2.7 percentage points (pcp) in 2017/18 (3rd quarter) and by 0.6 pcp in 2018/19. A growing share of this demand, however, is met through study abroad arrangements. There is a reported surge in the number Nepali students seeking college education abroad, such that Nepali students now rank among the largest group of foreign students in Australia, Japan, and New Zealand.

To gain a better understanding of investment opportunities in the education sector, the PSE study team shall update the estimate of private returns to education in Nepal using the Mincer Equation. In addition, the team shall estimate Nepal's private returns to education using a quality-adjusted years of schooling data. Figure 3 reports large differences in the actual and quality-adjusted years of schooling data for selected countries, which suggests that estimates of private returns to schooling might significantly differ between the two datasets.

The standard Mincer equation - the standard method to estimate private returns per year of schooling - estimates the natural logarithm of earnings in Equation [2]:

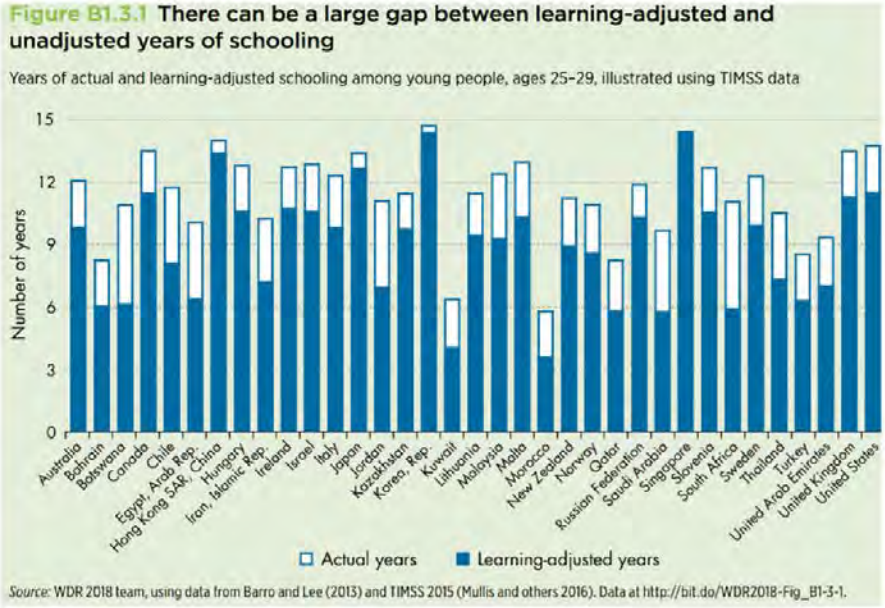
$$ln\ ln\ (y)\ = ln\ ln\ (y_0)\ + rS + \beta_1 X + \beta_1 X^2 \qquad [2]$$

Where y is earnings, e.g. hourly wage (y_0 is the earnings of someone with no education and no experience); S is years of schooling; X is years of potential labor market experience. The quadratic experience variable accounts for lifecycle earnings – often there is first an increase, then a flattening. A vector of other controlling variables may also be included, or the sample may be split for population subsets. In some specifications, a squared term for schooling or cross effects may be added to estimate non-linear returns or the interaction of education with other independent variables.

In these estimates, r is usually positive, indicating that earnings increase with education. Since the function is estimating the logarithmic impact on wages, the estimated coefficient on S can be interpreted as the percentage change in earnings for an additional year of schooling for the average individual. Where data is available, the study team shall provide estimates of r that are disaggregated by public and private education, by grade level, and by gender.

The study team shall also examine the impact of foreign employment and the growing number of Nepali students seeking education abroad on the demand for education in the country and on investment in this sector.

Figure 3. Quality-adjusted Years of Schooling



Price competitiveness index (PCI): landed import price-to-FOB

The PSE study team shall measure the price competitiveness index of major agricultural imports using the ratio of actual landed import price to an estimated FOB price. Landed import price includes the CIF (cost insurance and freight) import price, import duties at the border, and unloading cost. Since this is an imported product, the FOB (free on board) is estimated, to include wholesale price and transport cost up to the port of shipment. A price competitiveness index of less than one suggests that the supply of the product from domestic sources does not have a price advantage over the supply from foreign sources.

The PSE study team shall also estimate the cost structure of major agricultural imports. The ex-farm gate price will be decomposed into its components including, material cost, labor cost, other costs, and farm profit margin. The farm-to-wholesale price margin will be decomposed into its components including, material cost, labor cost, other costs, cost of services (e.g., transport, storage, processing, etc.), and wholesale profit margin. The wholesale-to-retail price margin will be decomposed into its components including, material cost, labor cost, other costs, cost of services (e.g., transport, storage, processing, etc.), and retail profit margin

The study team shall map each category of the cost structure to factors that affect its cost level, such as policies, market structure (monopoly and cartel), quality of infrastructure, speed and appropriateness of innovation, and availability and competency of the workforce. Using this mapping the study team shall conduct a price competitiveness scenario analysis for three scenarios including most likely, optimistic,

and pessimistic assumptions on policy reforms, infrastructure development, adoption of innovation, and workforce competency development.[495]

The study team shall work closely with USAID's assessment team to identify relevant stakeholders and arrange for consultations; identify and collect relevant studies for desk analysis; identify, collect, and develop a database for secondary data to support the quantitative analyses; conduct analyses; and draft the report.

Suggested Data Collection Methods

- **Economic Growth**
    - Studies for Review
        - Growth diagnostic studies (World Bank, ADB, DfID, and MCC)
        - Trade policy analysis
        - Trade facilitation analysis
        - Product space analysis
        - GON export program
    - Production data
        - Production and yield
        - Labor cost (wage rate, other benefits)
        - Materials cost
            - Domestic materials
                - Ex-factory price
                - Wholesale price
                - Retail price
                - Farm-gate price
            - Imported materials
                - World price
                - CIF import price
                - Wholesale price
                - Retail price
                - Farm-gate price
        - Cost of services
            - Storage cost
            - Transport cost
            - Processing cost
        - Other cost
            - Interest cost
            - Wage rate
            - Land rental
    - Price Data
        - Farm Price
        - Wholesale Price

[495] A similar scenario analysis was conducted by the World Bank on Men's Cotton Shirt. "Nepal Trade and Competitiveness Study," World Bank, 2003.

        - Retail Price
        - Seasonal Prices
        - Prices at different locations)
    - Trade data (H6 product disaggregation)
        - Imports (quantity, value, and sources)
        - Exports (quantity, value, and destination)
        - Re-export (quantity, value, and destination)

- **Education**
    - Mincer Equation
        - Salary and Wages
        - Years in Schooling
        - Quality-adjusted Years in Schooling
        - Demographic Characteristics
    - Roundtables for stakeholder consultations

- **Health**
    - Structure-Conduct-Performance Framework
        - Structure data: Number of enterprises, policies, regulations
        - Conduct data: Price, cost, quality
        - Performance: Price-Cost Ratio, technological progress, equity, product quality
    - Roundtables for stakeholder consultations

- **DR4**
    - Structure-Conduct-Performance Framework
        - Structure data: Number of enterprises, policies, regulations
        - Conduct data: Price, cost, quality
        - Performance: Price-Cost Ratio, technological progress, equity, product quality
    - Roundtables for stakeholder consultations

- **DG**
    - State of the art of private sector advocacy for economic reforms: challenges and opportunities
    - Private sector facilitation of public services

1.5 Deliverables and Reporting Requirements

Upon award, the PSE study team shall immediately hold a preliminary meeting with the USAID/Nepal CDCS PSE Assessment Team to discuss the purpose of the study, study questions, proposed methodology, data and data collection, and timeline. In addition to this meeting, the PSE study team must deliver a minimum of the following deliverables:

1.1.1 Work Plan**:**

The study team must complete a detailed work plan which will be approved by USAID/Nepal CDCS PSE Assessment Team. Guided by the framework of the study, the Work Plan must include the types of analyses that will be conducted, data requirements for these analyses, data sources, method of data collection, and timeline.

The work plan will include:

1. Draft schedule;
2. Detailed methodology, list of sources, and framework for analysis;
    1. Data collection methods
    2. Data collection instruments (if applicable); and
3. Report outline.

1.1.2 Draft Report with Presentation to USAID**:**

The PSE study team must identify, collect, prepare, and analyze the background literature. The team must submit a high quality (almost final) draft report containing the findings and conclusions to CDCS PSE Assessment Team. The report must be in a font size no smaller than 12 pt. and must be written or comprehensively edited by a fluent, experienced English writer.

The report must include signed disclosures of conflict of interest from each member who worked on any part of the report process. When applicable, the report must include statements regarding any significant unresolved differences of opinion on the part of the funders, implementers and/or members of the team.

The format for the report must be as follows:

Table of Contents:

- Table of Contents
- Acronyms and Abbreviations
- Team Members and Acknowledgements (optional)
- Abstract
- Executive Summary
- Purpose/Objectives
- Activity/Project/Assignment Background/Introduction
- Evaluation/Assessment/Research Questions
- Methodology (required for evaluations, recommended for studies and assessments, including data collections. The methodology section includes data collection methods, sampling strategy, and limitations)
- Demographics/Sample Characteristics (mainly for survey-based studies or assessments, baselines, impact evaluations
- Results/Findings and Conclusions/Discussion
- Recommendations (if applicable)

Appendices

- Statement of Work (required for evaluations, optional but suggested for other medium to large studies and assessments)
- References
- Disclosure of Conflict(s) of Interest (required for evaluations)
- Final data collection instruments (for studies collecting data)
- Additional tables / analyses (optional, especially for assessments, baselines, impact evaluations)

- Any other documents specific to this study

After review and discussion during the presentation of findings, the PSE study team will submit a final draft that incorporates written and verbal feedback from USAID. The PSE study team will be responsible to revise the report until it meets USAID requirements for quality.

1.1.3 Final Report:

The PSE study team will be asked to take no more than 10 business days (or as agreed upon in the work plan) to respond to and incorporate final comments from USAID/Nepal.

The PSE study team will submit the final report to the Development Experience Clearinghouse (DEC) within three months of final approval as determined by USAID.

1.2 Team Composition

The PSE study team shall include sectoral experts in social, environmental and economic development (SEED), health, education, democracy and governance, and disaster risk management (e.g., construction); and a communications expert. The SEED sectoral expert will also serve as study team leader.

Table 1. PSE Study Team Composition, Responsibilities and Qualifications

PSE Team Leader (same person as SEED local expert)	
Responsibilities	*Qualifications*
1. Leads the PSE Study Team and ensures the implementation of the study according to schedule. 2. Conducts desk review of debriefing materials and revise, as needed. 3. Collaborates with team members on the development and finalization of methodology, data requirements, data collection plan, and data analysis. 4. Submits work plan for approval by USAID/Nepal CDCS Assessment Team, including methodology, data requirements, data collection plan 5. Leads the team planning workshop, meetings with USAID, and oral debriefs. 6. Coordinates assignments of locally hired experts and support staff. 7. Leads the team in carrying out the study based on USAID approved methodology, including data collection, stakeholder consultations, and data analysis.	1. A master's degree in economics with specialization in development economics or international economics. 2. Minimum of 5 years of experience in economic growth programs. 3. Minimum of 5 years of experience in designing, implementing, managing, monitoring, and evaluating international development programs. 4. Prior experience in leading study/research team; excellent skills in planning and facilitation. 5. Prior experience in conducting growth diagnostic analysis, preferably using the HRV-GD model. 6. Familiarity with general trade concepts (e.g., RCA) and Nepal's trade policies. 7. Familiarity with the Structure-Conduct-Performance Framework as applied in supply chain analysis. 8. Familiarity with Mincer Equation to estimate private returns to education. 9. Familiarity with laws, policies, and regulations affecting the agriculture, health, education, and construction sectors.

8. Leads the presentation of preliminary findings and conclusions for debriefing relevant USAID staff. 9. As primary author, prepares the draft report.	10. Excellent interpersonal skills, including experience successfully interacting with various stakeholders. 11. Strong oral and written communication skills, with extensive report writing experience; familiarity with USAID report style. 12. Experience working in Nepal or the South Asia region preferred. 1.
Local Social, Environmental and Economic Growth Sector Expert	
Responsibilities	*Qualifications*
1. Leads in developing methodologies to estimate price competitiveness index and revealed comparative advantage 2. Specifies data requirements to support estimation of PCI and RCA. 3. Identifies data sources, collect data, and develop a database to support estimation of PCI and RCA. 4. Estimates PCI and RCA. 5. Develops the export opportunity map. 6. Identifies reform areas and estimate reasonable cost reduction expected from each area and overall reduction in price from the combined reforms. 7. Identifies factors that hinder the development of market-based products that improve natural resource management. 8. Initiates a draft of the EG sector section of the report. 9. Delivers databases developed for the project and notes taken during stakeholder consultations.	1. Experience in estimating cost structure and RCA. 2. Familiarity with policies and regulations that impact cost structures of enterprises. 3. Familiarity with general trade concepts (e.g., RCA) and Nepal's trade policies. 4. Familiarity with Nepal and world trade data; understands the HS - Harmonized Commodity Description and Coding System. 5. Familiarity with market-based products that are used to improve natural resource management (e.g., payment for ecosystem services and tradable land, water, and pollution rights). 6. Familiarity (working contact) with enterprises in the trade sector and their association. 7. At least three years of experience working with Microsoft Office (Word, Excel, PowerPoint, Access Database); and functional knowledge of econometric software; has experience estimating statistical regression models. 8. Strong oral and written communication skills, with some report writing experience.
Local Democracy and Governance Sector Expert	
Responsibilities	*Qualifications*
1. Leads in developing a methodology to assess the functional capacity of private sector representatives to conduct advocacy activities to advance a policy reform agenda. 2. Leads in identifying all public services for the business community, including GON entity providing the service, the cost of the service, and quality of service. 3. Initiates a draft of the DG sector section of the report.	1. Master's degree with a major in social science and political science. 2. At least two years of experience (in various capacities) with international donor-funded activities. 3. Familiarity (working contact) with enterprises and their associations (e.g., Federation of Nepalese Chambers of Commerce and Industry, Confederation of Nepalese Industries, etc.

4. Delivers databases developed for the project and notes taken during stakeholder consultations. 2.	4. Familiarity with the organization of government, including the cabinet and parliament; and legislative law-making process. 5. Working knowledge on the World Economic Forum's Competitiveness Index and the World Bank's Ease of Doing Business. 6. Familiarity with existing laws that impact investment climate and business enabling environment. 7. At least three years of experience with the GON working on law making process and/or experience with civil society and NGOs on advocacy efforts. 8. At least three years of experience working with Microsoft Office (Word, Excel, PowerPoint, Access Database); and functional knowledge of econometric software; has experience estimating statistical regression models. 9. Strong oral and written communication skills, with some report writing
Local Health Sector Expert	
Responsibilities	*Responsibilities*
1. Leads in developing and applying a SCP Framework to identify factors that impede investment in the health sector supply chain that created gaps in supplying standard drugs and quality health services. 2. Specifies data requirements to support health sector supply chain analysis. 3. Identifies data sources, collect data, and develop a database to support health sector supply chain analysis. 4. Identifies factors that hinder the development and widespread use of financial and insurance products that improve access to good quality health services. 5. Maps pharmaceutical and health services supply chain. 6. Initiate a draft of the health sector section of the report. 7. Delivers databases developed for the project and notes taken during stakeholder consultations. 3.	1. A master's degree in economics with a specialization in health economics. 2. At least two years of experience (in various capacities) with international donor-funded activities. 3. Prior experience in conducting supply chain analysis, preferably in health sector using a market Structure-Conduct-Performance Framework. 4. Familiarity (working contact) with enterprises in the pharmaceutical and health services supply chain and their association. 5. Familiarity with financial and insurance products used in the health sector. 6. Familiarity with laws, policies, and regulations affecting the health sector. 7. Familiarity with mobile applications for inventory management with GIS capability. 8. At least three years of experience working with Microsoft Office (Word, Excel, PowerPoint, Access Database); and functional knowledge of econometric software; has experience estimating statistical regression models.

	9. Strong oral and written communication skills, with some report writing experience.
Local Education Sector Expert	
Responsibilities	*Responsibilities*
1. Leads in developing and applying a SCP Framework to identify factors that impede investment in the education sector supply chain that created gaps in supplying quality education services. 2. Specifies data requirements to support education sector supply chain analysis. 3. Identifies data sources, collect data, and develop a database to support education sector supply chain analysis. 4. Identifies factors that hinder the development of financial and savings products that improve access to good quality education services. 5. Maps education services supply chain 6. Leads in developing and applying a Mincer Equation Model to estimate private return to education; specify data requirements; identify data sources, collect data, and develop a database to support estimation of Mincer Equation. 7. Initiate a draft of the education sector section of the report. 8. Deliver databases developed for the project and notes taken during stakeholder consultations.	4. A master's degree in economics with specialization in economics of education. 5. At least two years of experience (in various capacities) with international donor-funded activities. 6. Prior experience in conducting supply chain analysis, preferably in the education sector using a market Structure-Conduct-Performance Framework. 7. Familiarity (working contact) with enterprises/entities in the education sector and their association. 8. Familiarity with laws, policies, and regulations affecting the education sector. 9. Familiarity with financial savings products used in the education sector. 10. Working knowledge on Mincer Equation and prior experience in estimating private returns to education using Mincer Equation. 11. At least three years of experience working with Microsoft Office (Word, Excel, PowerPoint, Access Database); and functional knowledge of econometric software; has experience estimating statistical regression models. 12. Strong oral and written communication skills, with some report writing experience.
Local Construction Sector Expert	
Responsibilities	*Responsibilities*
1. Leads in developing and applying a SCP Framework to identify factors that impede investment in the construction material supply chain that created gaps in supplying quality construction materials in the market. 2. Specifies data requirements to support construction material supply chain analysis. 3. Identifies data sources, collect data, and develop a database to support construction material supply chain analysis. 4. Identifies factors that hinder the development and widespread use of financial and insurance	1. A bachelor's degree in engineering and a master's degree, preferably in business or economics. 2. At least two years of experience (in various capacities) with international donor-funded activities. 3. Prior experience in conducting supply chain analysis, preferably in construction materials using a market Structure-Conduct-Performance Framework.

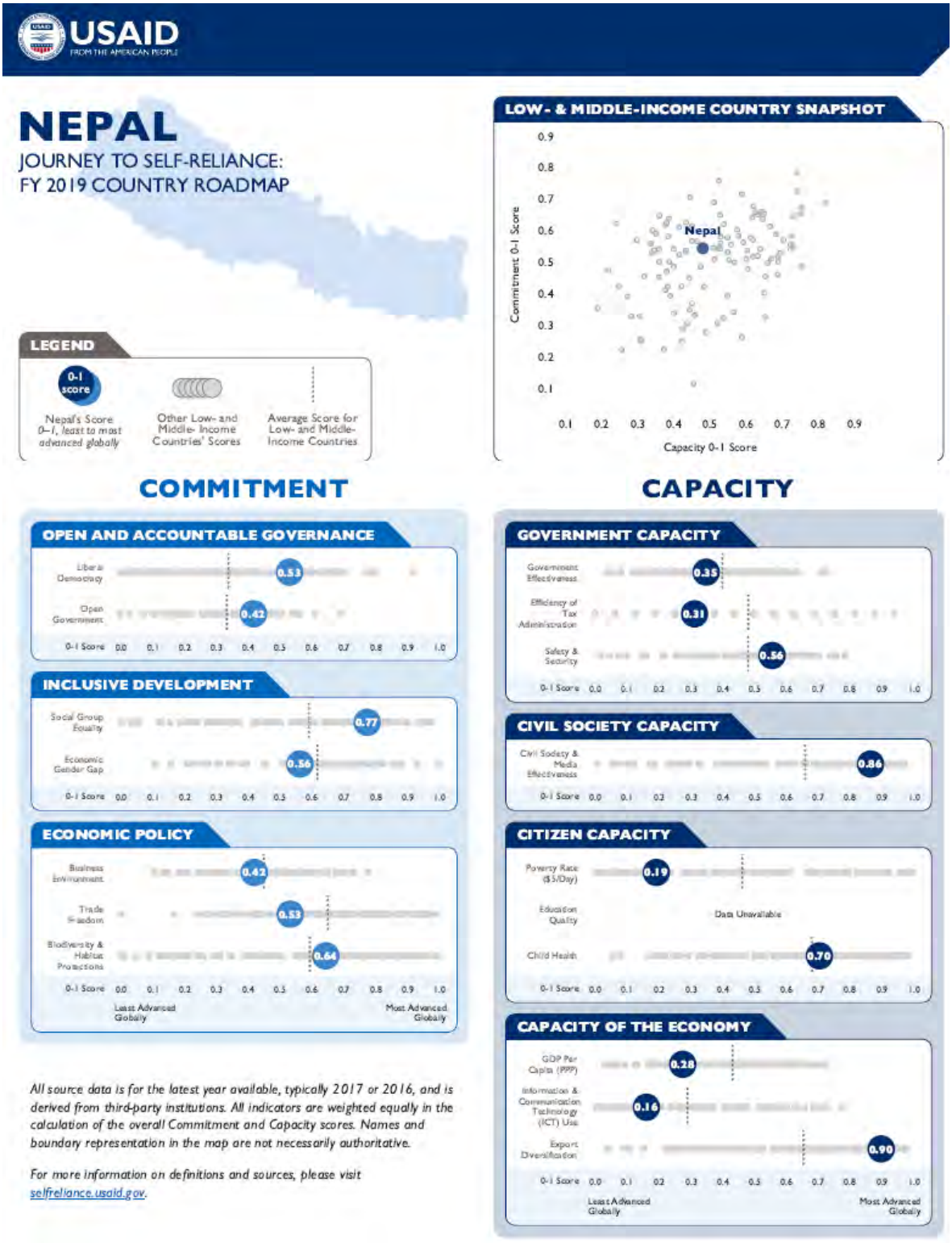
products that improve the quality of building infrastructure and its ability to withstand shocks from disaster events (e.g., earthquakes). 5. Maps construction material supply chain. 6. Initiate a draft of the DR4 sector section of the report. 7. Deliver databases developed for the project and notes taken during stakeholder consultations.	4. Familiarity (working contact) with enterprises/entities in the construction sector and their association. 5. Familiarity with building codes and other regulations governing the construction sector. 6. Familiarity with mobile applications for inventory management with GIS capability. 7. Familiarity with insurance products used in the construction sector. 8. At least three years of experience working with Microsoft Office (Word, Excel, PowerPoint, Access Database); and functional knowledge of econometric software; has experience estimating statistical regression models. 9. Strong oral and written communication skills, with some report writing experience. 13.

11.7 Timeline

The timeline for this SOW is three months, beginning in August through the end of October 2019. The actual time count starts when the study team is fully onboard. The study team completes the study by the end of October.

Table 2. GANTT Chart - PSE Study Team Calendar of Activities

	August				September				October			
	1	2	3	4	1	2	3	4	1	2	3	4
Desk review												
Draft study design to USAID												
In-brief												
Final study design to USAID												
Data collection and analysis												
Sharing of preliminary findings												
Report first draft to USAID												
De-briefing on major findings												
Final report to USAID												


USAID
FROM THE AMERICAN PEOPLE
NEPAL
JOURNEY TO SELF-RELIANCE:
FY 2019 COUNTRY ROADMAP
LOW- & MIDDLE-INCOME COUNTRY SNAPSHOT
Commitment 0-1 Score
Capacity 0-1 Score
Nepal
LEGEND
0-1 score
Nepal's Score 0–1, least to most advanced globally
Other Low- and Middle- Income Countries' Scores
Average Score for Low- and Middle-Income Countries
COMMITMENT
OPEN AND ACCOUNTABLE GOVERNANCE
Liberal Democracy
0.53
Open Government
0.42
INCLUSIVE DEVELOPMENT
Social Group Equality
0.77
Economic Gender Gap
0.56
ECONOMIC POLICY
Business Environment
0.42
Trade Freedom
0.53
Biodiversity & Habitat Protections
0.64
Least Advanced Globally
Most Advanced Globally
CAPACITY
GOVERNMENT CAPACITY
Government Effectiveness
0.35
Efficiency of Tax Administration
0.31
Safety & Security
0.56
CIVIL SOCIETY CAPACITY
Civil Society & Media Effectiveness
0.86
CITIZEN CAPACITY
Poverty Rate ($3/Day)
0.19
Education Quality
Data Unavailable
Child Health
0.70
CAPACITY OF THE ECONOMY
GDP Per Capita (PPP)
0.28
Information & Communication Technology (ICT) Use
0.16
Export Diversification
0.90
Least Advanced Globally
Most Advanced Globally
All source data is for the latest year available, typically 2017 or 2016, and is derived from third-party institutions. All indicators are weighted equally in the calculation of the overall Commitment and Capacity scores. Names and boundary representation in the map are not necessarily authoritative.
For more information on definitions and sources, please visit selfreliance.usaid.gov.

Annex B. USAID Policy Framework
https://www.usaid.gov/sites/default/files/documents/1870/WEB_PF_Full_Report_FINAL_10Apr2019.pdf

Annex C. USAID PSE Policy
https://www.usaid.gov/sites/default/files/documents/1865/usaid_psepolicy_final.pdf

Annex D. Nepal Economic Review (Constraints Analysis)
https://drive.google.com/drive/u/0/folders/16kDmVwc5AVWGagUKoeoj8ZGkOF5k7nac

Annex E. MCC Nepal Growth Diagnostics
https://docs.google.com/document/d/1G0Eu0S_n8rTIJVVfWxPM4aJZVGDIF0UkPqZdFMrhQXY/edit

Appendix 2: Types of Issues Over the Last Ten Years

Year	IPOs		Mutual Funds		Right Shares		FPOs		Debenture	
	No. of Issues	Total Value (in NPR Billion/s)	No. of Issues	Total Value (in NPR Billion/s)	No. of Issues	Total Value (in NPR Billion/s)	No. of Issues	Total Value (in NPR Billion/s)	No. of Issues	Total Value (in NPR Billion/s)
2009	36	3.07	0	0	35	10.96	1	0.715	0	0
2010	15	1.72	0	0	31	5.04	0	0	1	0.3
2011	15	1.29	0	0	7	0.4516	0	0	3	1.2
2012	22	3.11	2	1.25	5	3.93	0	0	7	3.55
2013	16	1.57	1	1	26	4.24	0	0	3	1.45
2014	18	6.98	3	2.25	22	2.31	0	0	5	2.9
2015	14	2.76	1	1	37	9.4	3	5.83	0	0
2016	16	1.51	4	4.25	76	45.64	4	7.99	0	0
2017	21	8.3	4	4.8	55	25.7	6	11.5	1	3
2018	25	7.24	4	3.9	15	4.33	0	0	9	19.58

Source: Annual Report, SEBON
Note: IPO-initial Public Offering, FPO-Further Public Offering

Appendix 3: Tax Structure of Major South Asian Nations

	Countries					
Tax by Type	**Nepal**	**India**	**Sri Lanka**	**Bhutan**	**Pakistan**	**Bangladesh**
Profit Tax (% of Profit)	15	21.6	1.2	33.9	17.8	31
Labor Tax and Contributions (% of Profit)	26.2	20.2	16.9	0	14.9	0
Other Taxes (% of Profit)	0.7	7.9	37.1	1.4	1.1	2.3
Total	41.9	49.7	55.2	35.3	33.8	33.3

Source: World Bank, Doing Business, 2020.

Appendix 4: Enforcing Contracts Index Among South Asian Nations

S.N.	Country	Overall Index Ranking
1	Nepal	151
2	India	163
3	Sri Lanka	164
4	Bangladesh	168
5	Bhutan	29
6	Pakistan	156

Source: World Bank, Doing Business, 2020.

Appendix 5: Capital Expenditure Over the Last Eight Fiscal Years for Nepal

Fiscal Year	Capital Expenditure (in Million/s USD)	GDP (in Billion/s USD)	Percentage
2010	0.47	**16.00**	2.95
2011	0.51	**18.91**	2.72
2012	0.55	**18.85**	2.90
2013	0.67	**19.27**	3.46
2014	0.89	**20.00**	4.44
2015	1.59	**21.41**	7.43
2016	6.78	**21.19**	32.01
2017	14.03	**25.18**	55.72

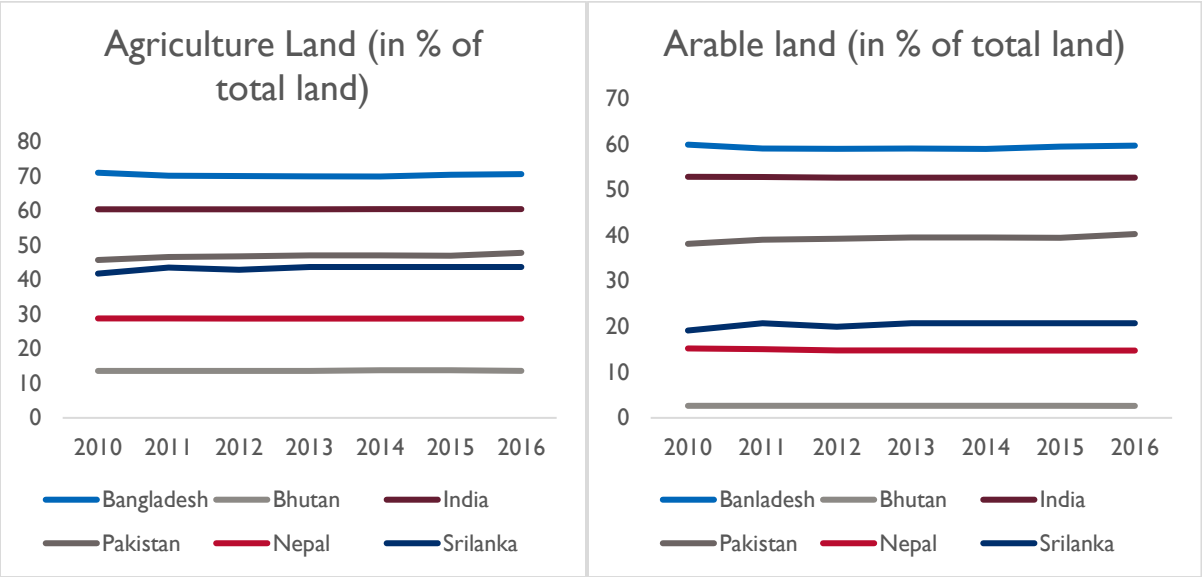
Source: NRB (2019) and World Bank Development Indicators, 2019.

Appendix 6: Corruption vs. Per Capita Income

Country	Corruption Index as of 2018	Per Capita Income (in USD)	Remarks
Denmark	91	61,350	Low corruption
Canada	83	46,233	Low corruption
Pakistan	30	1,482	High corruption
Nepal	27	1,034	High corruption

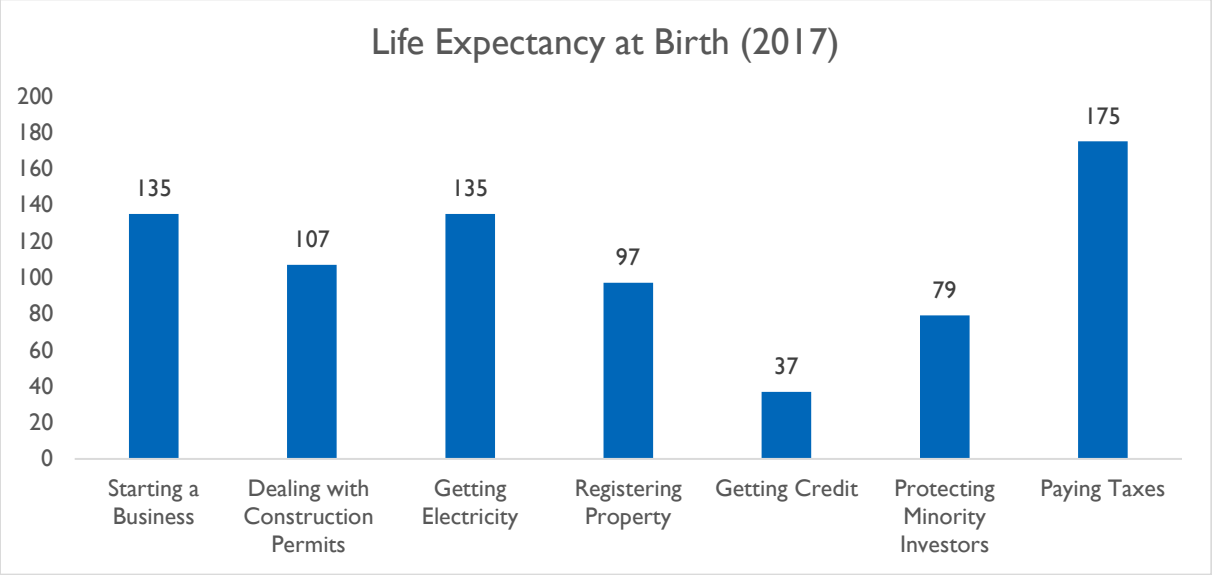
Source: World Bank Development Indicators, 2019.

Appendix 7: Agricultural and Arable Land as Percentage of Total Land for Nepal



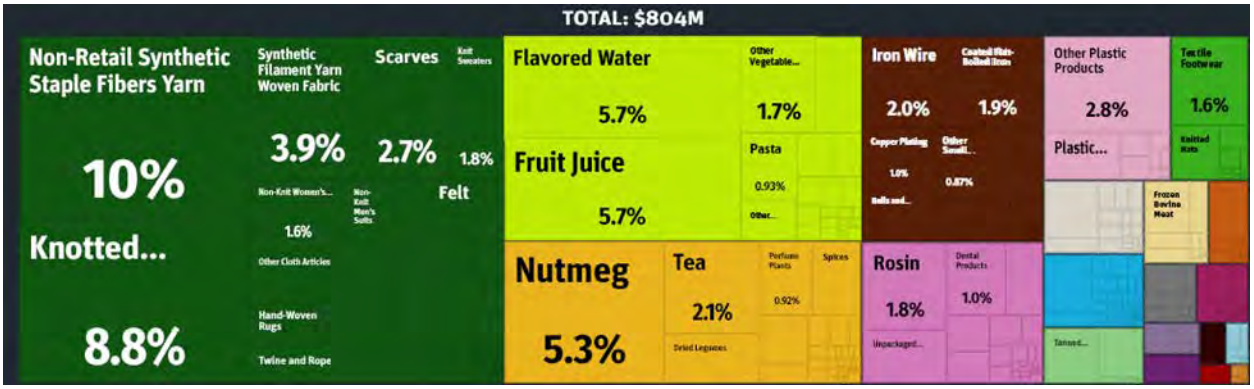
Source: World Bank Development Indicators, 2019.

Appendix 8: Life Expectancy in South Asian Countries (2017)



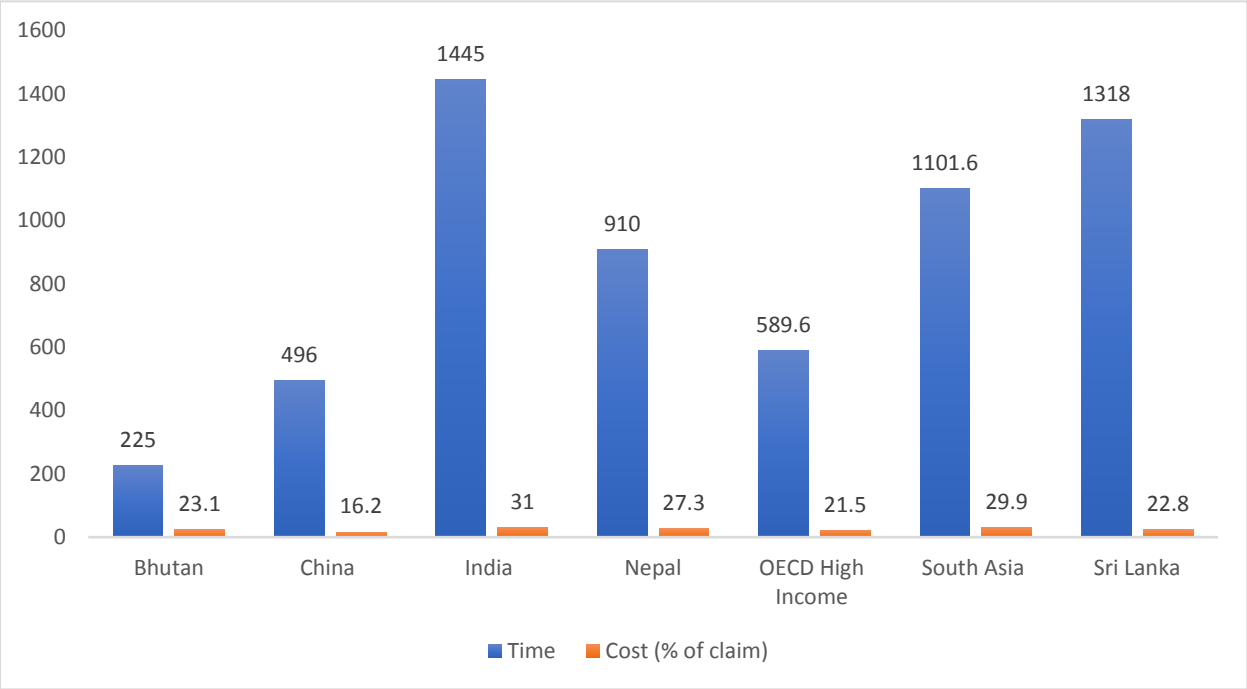
Source: World Bank Data Indicators, 2017.

Appendix 9: Nepal Export by Harmonized Commodity Description and Coding System 4 Classification as of 2017



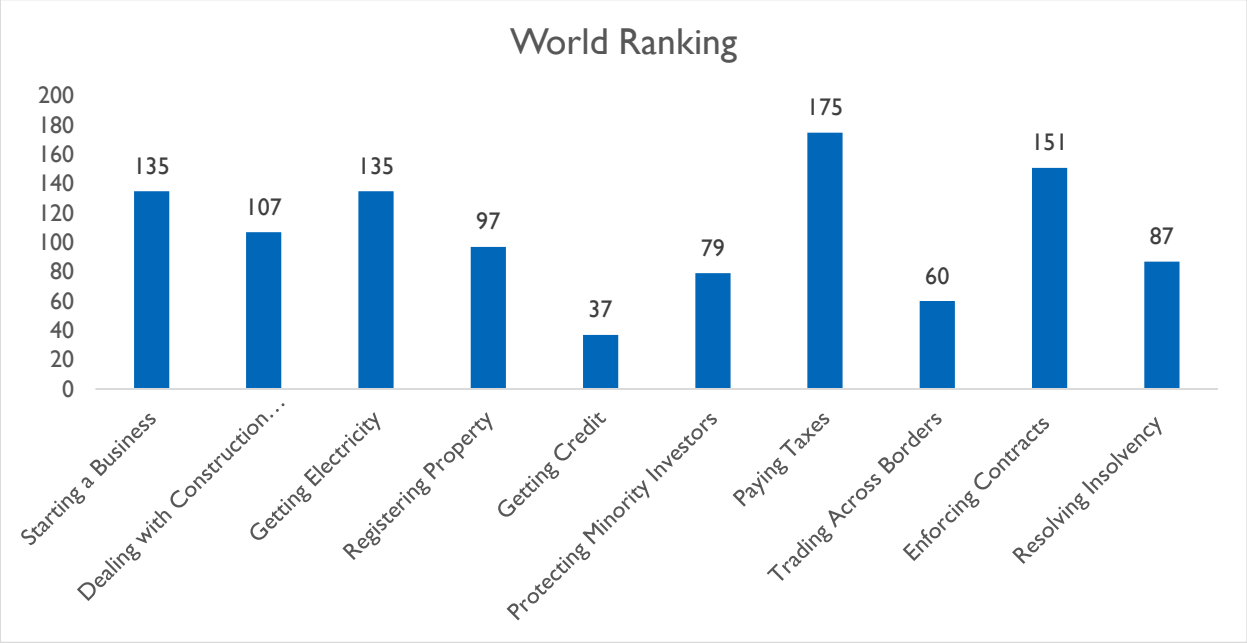
Source: OEC Country Profile-Nepal reprinted from https://oec.world/en/profile/country/npl/.

Appendix 10: Enforcing Contracts in Nepal, Time and Cost



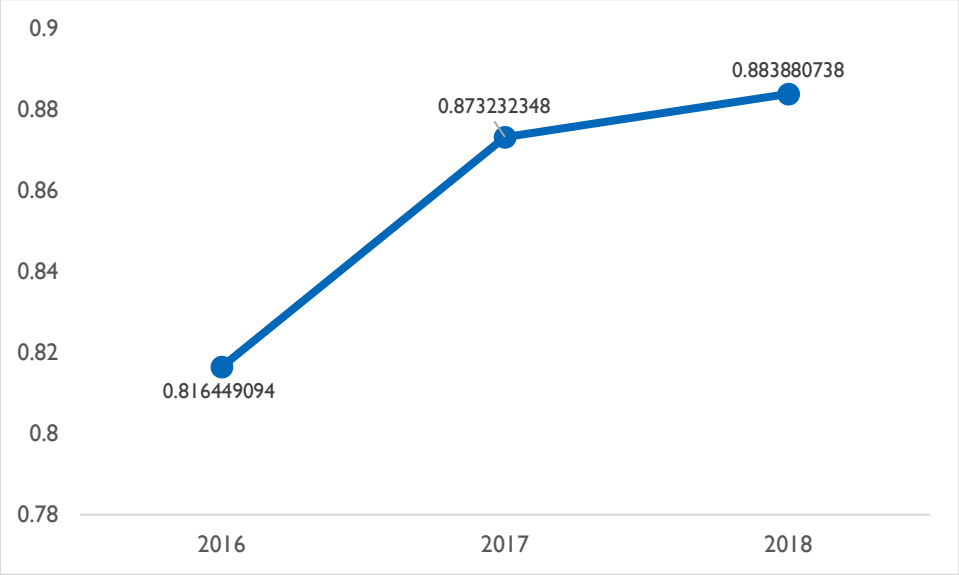
Source: World Bank Group, 2019.

Appendix 11: Other Business Indicators



Source: World Bank Group, 2019.

Appendix 12: Contribution of Remittance in Net Transfer



Source: Nepal Rastra Bank.

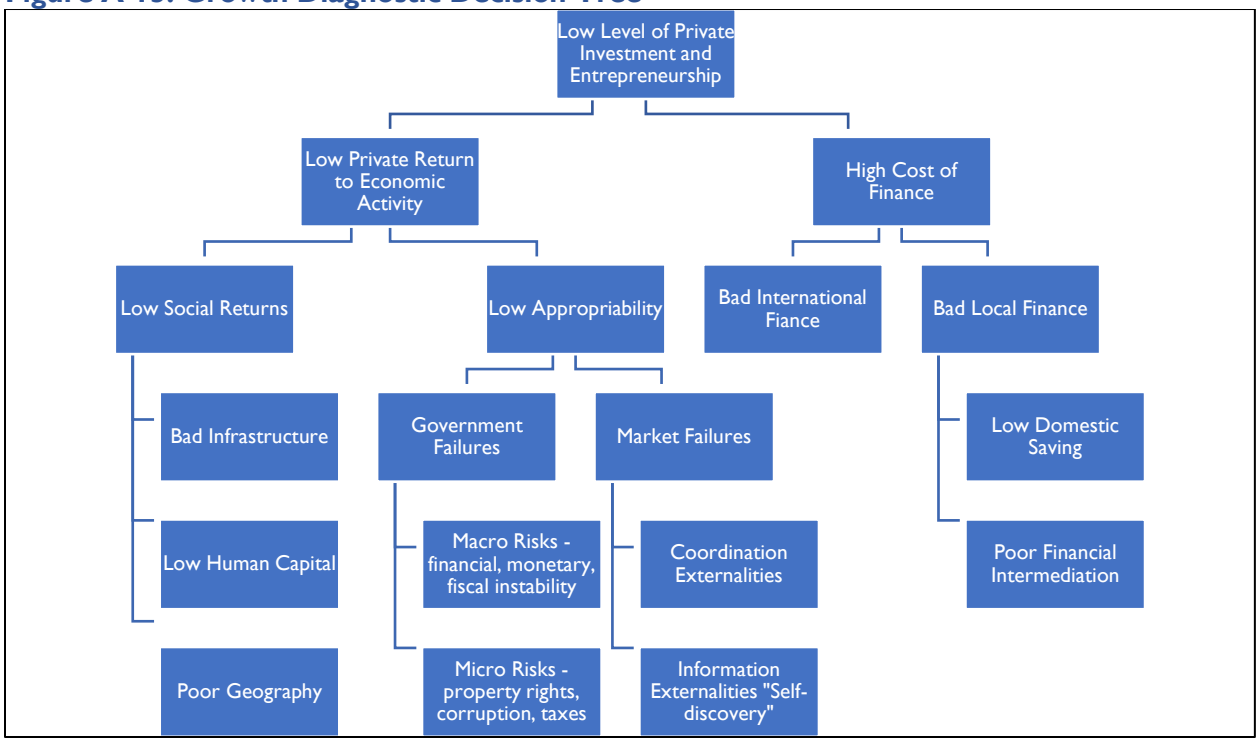
Appendix 13: Hausmann, Rodrik, and Velasco Growth Diagnostics

For decades, economists and policy advisors looked to improve economic growth in developing countries by advising governments to adopt a uniform basket of fiscal, monetary, and structural reforms. Rarely and with limited success would advisors prioritize reforms or identify which reforms would result in the greatest improvement. In 2005, economists Ricardo Hausmann, Dani Rodrik, and Andrés Velasco (HRV) conceived of the growth diagnostic method, which allows policymakers in each country to identify the issue most constraining economic growth considering country-specific, relevant evidence. The resulting analysis provides the government with sufficient evidence to determine what reforms will lead to the greatest economic improvement. By focusing only on the most binding constraints rather than the simultaneous pursuit of a broader set of reforms, the method allows each country to layout a targeted reform agenda that will improve upon the mixed results of past reform efforts while also limiting the implementation time and cost.

The HRV method provides a coherent conceptual framework on which the growth diagnostic is constructed. The paradigm finds its foundational roots in two paradigms from the economic literature. The first paradigm is the standard growth theory of households, firms, and government. which specifies the variables that influence the optimization of investment and consumption. Households are characterized as choosing consumption to maximize their utility subject to a budget constraint. Similarly, firms are characterized as investing to maximize profits subject to their own budget constraint. The government is subject to a budget constraint as well. The framework then rests on the derivation of the respective optimal decision rules of households and firms, which can be solved for a balanced growth path of investment and consumption.

The balanced growth path for investment includes all the factors that influence investment within the model's specification of households, firms, and government optimization functions. The second feature of the framework then sorts each of these factors into one of two logical categories: cost of finance and returns to investment. These categories are then organized in a decision tree structure (Figure A-13) that naturally lends to a logical and sequential assessment of bindingness. Each node along the tree is assessed, and a determination is made as to whether it poses a binding constraint to investment. For example, at the highest node of the decision tree, the first assessment of binding-ness between the cost of finance and private returns corresponds to a realistic investment decision problem faced by actual investors. That is, investors will restrict their activities either because the cost of finance is too high or because the returns to investment are too low. If returns are identified as the binding factor, then the next level of assessment is to determine why investors are unable to earn or retain adequate returns. Social returns, returns from natural capital, human capital, or infrastructure may be low. Alternatively, there may be a high risk associated with the ability to retain or appropriate returns because of macroeconomic or microeconomic policy and regulatory risks, or intrinsic market failures.

Figure A-13. Growth Diagnostic Decision Tree



Source: R. Hausmann, D. Rodrik, and A. Velasco. 2005. Growth Diagnostics.

A node along the growth diagnostic decision tree is determined to be a binding constraint when there is a preponderance of evidence demonstrating conclusively that one or more of the following four test results in a positive finding:

1. The (shadow) price of the constraint is high.
2. Movements in the constraint produce significant movements in the objective.
3. Agents in the economy attempt to overcome or bypass the constraint.
4. Agents less intensive in the binding constraint are more likely to survive and thrive, and vice versa.

The conceptual basis of these tests rests on elementary concepts of supply and demand, yet careful interpretation is necessary to avoid false conclusions. The validity of the determination of a constraint lies not with conclusive evidence from anyone measure or even one test, but, rather, is based on the preponderance of evidence generated from several measures across all four tests. The specific evidence for each test may vary across different growth diagnostics based on need, as well as issues stemming from the availability or quality of data or other problems with the application of various analytical methods. Part of the strength of the method, however, is that it is adaptable, utilizes whatever analytical methods may be available, and relies directly on existing country-specific studies in the literature and other relevant evidence.

Another advantage of the HRV method is that the four tests can be conducted through direct, market-based assessments that use price as the main metric of binding-ness. For corroboration, this direct

market test is combined with observable behavior of economic agents (e.g., firms and consumers) in overcoming and bypassing constraints, as well as in measurable performance outcomes of firms improving their profitability. The theory follows that those firms that can adjust their operations to bypass a binding constraint are the firms that are more likely to survive and thrive.
The first two tests are direct market assessments of binding-ness. When the price of a factor is high, examining the quantity of the factor supplied helps to determine why the factor is constrained. For instance, a high price with a low quantity suggests that a factor is binding due to weak supply. Alternatively, when a high price is coupled with a high quantity, the factor may be binding because of strong demand. The second test can provide an indirect market assessment of binding-ness, especially when no direct price is observable. When a factor is binding because of a high price, it is most often the case that a reduction in price is associated with a significant response in the objective function (i.e., investment or growth). Even if market prices are available and used to demonstrate test 1, test 2 can confirm the findings.[496]

The third test is based on the adjustment behavior of agents that attempt to overcome and bypass a constraint when the shadow price is high. Because it is not a direct quantitative test, the observed adjustment behavior must be carefully interpreted in the determination of binding-ness. A classic example of test 3 is in choosing the optimal resource combination of labor and capital. If firms are becoming more capital intensive over time (i.e., firms are substituting labor with capital), then it suggests that the price of capital is becoming relatively cheaper (less binding) compared to the price of labor. An alternative example is illustrated in a case where agents are incurring a higher cost in their attempt to overcome or bypass a constraint. In this case, test 3 has an element of test 1 because the shadow price of the bypassed factor is not fully reflected by the given price but by the higher cost incurred by agents as they bypass the constraint. To demonstrate this point, consider firms that use generators when grid-supplied electricity is limited or of low quality. In effect, the shadow price of electricity is not the price paid to the utility company, but the full cost of electricity accounting for both grid-based and self-generated supply.

The third test can be explained further through a final example drawn from the use of internal financing by firms, a common occurrence in developing countries. Again, test 3 is when cheaper alternatives substitute more expensive factors. Firms may be similarly motivated to utilize internal financing if the cost of external finance is high. Alternatively, there can be cases where internal financing is preferred because investment opportunities are poor, making them economically unviable under a credit financing scheme, even if lending rates are low relative to comparator countries. In this case, credit financing is not substituted as much as it is avoided. The difference here is that the constraint is not credit financing, but rather, poor investment opportunities.

The fourth test investigates how different economic actors or activities perform after making the adjustments identified in the third test. That is to say, the factors that are not constrained will be utilized by survivors more intensively. Conversely, survivors will use factors that are constrained less. Test 4 can be best illustrated with the expected trade outcome based on standard trade theory. This theory predicts that countries will export products that use abundant factors intensively. This means that firms

[496] The mirror-image relationship of tests 1 and 2 is best illustrated in a linear programming context. The solution of a linear program problem is the levels of each activity that maximize the objective function (e.g., profit), while at the same time meeting all the constraints. The shadow of a factor can then be derived by calculating the change in the optimal objective function when a factor is increased by one unit. Hence, a significant movement of the objective function (test 2) is equivalent to a high shadow price (test 1), and vice versa.

differentially survive and thrive, leading to an export sector populated by agents whose production technology is intensive in abundant factors (i.e., not binding) in the country.

The interrelationship between the four tests – drawn from the innate economic logic within the theoretical paradigm – lends validity to the method through alignment and internal consistency across the four tests. That is, agents will likely survive and thrive (test 4) if they can successfully overcome and bypass (test 3) factors that command a high price (test 1). These factors command a high price when they produce significant movements of the objective function (test 2). Because of this consistency, if a factor is determined to be binding by one of the four tests, then it is highly likely that the other three tests will arrive at the same determination if they can be feasibly applied. At its core, growth diagnostics is a data-driven process in search of sufficient evidence. To this end, binding-ness is only confirmed when the preponderance of the evidence (i.e., most of the evidence from one or more tests) points conclusively to a constrained factor.

Appendix 14: Export Opportunity Map Detailed Methodology

1) Data Finding and Screening

To compute the EOM, initially, data (using HS4 harmonic code) of world export from 2010 to 2017 was retrieved from the website dataverse.harvard.edu.[497] The file had 6.5 million data for 250 countries. The export value of the respective years was adjusted to the change in the price level to reduce the impact of oil price shock.[498] Considering the scope of the study, the file was further filtered based on the location code, and the data relating to Nepal (with 1,241 products) was selected. Two hundred sixty-six cases also were deleted as they had no export value. The final data set contained 975 products.

2) Understanding the World Market Trend (Expanding or Shrinking)

To understand the global market scenario of the product, the final data set was classified into three timeframes, 2010-2011, 2012-2013, and 2014-2017, and the mean export value of the products was computed to analyze whether the status of the product is expanding or shrinking. To facilitate the comparison, the mentioned timeframe was further classified as period 1 (2010-2011 to 2012-13) and period 2 (2012-2013 to 2014-2017). In the case of period 1, if the export value in 2012-2013 was greater than 2010-2011 (positive growth), the product was classified as an expanding product and if the scenario was opposite with value of the product in 2010-2011 being greater than 2012-2013 (negative growth) the product was classified as a shrinking product.

The same process was repeated to understand if the product is expanding or shrinking in period 2. In this context, if the value of the product in 2014-2017 was greater than 2012-2013 (positive growth), the product was classified as an expanding product, and if the scenario was opposite the product was classified as a shrinking product.

3) Classification – At a Fast Pace or a Slow Pace

To further understand the speed of growth rate, the products were segregated at a fast pace or slow pace growing products. In doing so, first, the overall average growth rate for expanding and shrinking market was computed and compared with the growth rate of individual products. If the growth rate of the individual product exceeded the overall average growth, it was classified as a fast pace expanding, and if the opposite was true, the product was classified as a slow pace.

In the case of a shrinking market, to ease the comparison, the absolute value of growth rate was considered by multiplying with -1[499]. The same process was followed to conclude a fast pace or slow pace; if the individual growth rate was greater than the overall average, the product was classified as fast pace shrinking, and if the opposite was true, the product was classified as slow pace shrinking.

4) Determining the potential of the product through Revealed Comparative Advantage (RCA)[500]

[497] The website collects export data from all over the world as reported by the respective governments.

[498] The amount was divided by the GDP deflator, which shows to what extent change in GDP relies on changes in the price level.

[499] In shrinking market, growth rate is negative, so the value had to be multiplied by -1.

The RCA is defined as the ratio of two shares. The numerator is the share of a country's total exports of the commodity of interest in its total exports, and the denominator is the share of world exports of the same commodity in total world exports. The RCA value takes a minimum value of "0" with no upward limit (i.e., infinity). A country is said to have a comparative advantage if the value of RCA is more than one. For example, if Nepal trades only with India and produces cardamom with an export value of $75 and oranges with an export value of $25, then the total export value is $100. The percentage export share of cardamom (out of total export) for Nepal is 75 percent.[501] If India also trades only with Nepal and produces cardamom and apples with export values of $15 and $30, respectively, the simple calculation reveals that the percentage share of cardamom to world export (consisting of India and Nepal) is 62 percent.[502] In this case, the RCA value of cardamom for Nepal is 1.21.[503] This figure, 1.21, further reveals that the export share of Nepali cardamom is higher than that of imports, primarily India. On the contrary, the RCA value of cardamom exports for India is 0.53,[504] which means as compared to Nepal, India is not competitive in producing cardamom.

In this context, to understand Nepal's ability to produce such goods, the value of RCA was extracted from the final data set. To facilitate the computation of EOM, the average RCA value was computed by sub-dividing the timeframe by two periods—period 1 (from 2011-2013) and period 2 (2014 and 2017, which excludes 2015 and 2016 to avoid the erratic impact of the 2015 earthquake).

1. Classification - Increasing Trend or Decreasing Trend

The increasing or decreasing trend was identified to understand whether the export potential of the product increased or decreased from period 1 to period 2. If the RCA value in period 2 was higher than period 1 (signifying that export potential has increased as Nepal exported more of such products), then the product was classified as an increasing trend, or else, if the opposite were true (i.e., RCA value in period 2 was lower compared to period 1), the product was classified as a decreasing trend.

2. Computation of EOMs

Map 1:[505] Map 1 was computed by taking two parameters into consideration, which included the world market trend for period 1 (i.e., 2010 - 2011 and 2012 - 2013) and RCA for period 1 (i.e., 2011 - 2013). The RCA value was placed in the vertical column to evaluate the export potential (or comparative advantage) of Nepal. As mentioned above, if the value of RCA>=1.[506] Nepal can produce such goods (in other words, Nepal has a comparative advantage in producing such goods), whereas, if the RCA<1, then Nepal has a comparative disadvantage[507] in producing such goods. The world market trend was placed in

[501] (75/100)*100%=75%.
[502] Total export of cardamom =75+15=90; and world's export= 100+45=145. Therefore, the overall share of cardamom is 90/145=62%.
[503] RCA- cardamom for Nepal is 75/62=1.21.
[504] RCA-cardamom for India is (15/45)/(90/145)=0.53.
[505] Please see appendix table 9 for the detailed calculation.

[506] RCA>=1 means export potential is high as the proportionate export share of the product is greater than world's share.

[507] If the proportional value of export of a product, as compared to the world export of same product, is low then such goods are termed to have comparative disadvantage. For instance, let's assume that total export of Nepal is $100 and the share of the

a horizontal column to understand if the product falls under the expanding or shrinking market category. As explained above, if the growth rate is positive, the product is categorized as expanding, and if it is negative, the product is shrinking.

Map 2:[508] Map 2 was computed by considering two parameters, and these included the world market trend for period 2 (i.e., 2012 - 2013 and 2014 - 2017) and RCA for period 2 (i.e., 2011 - 2013). RCA value was placed in the vertical column to evaluate the export potential (or comparative advantage) of Nepal. As mentioned above, if the value of RCA>=1,[509] Nepal has a comparative advantage in producing such goods, whereas, if the RCA<1, then Nepal has a comparative disadvantage[510] in producing such goods. The world market trend was placed in the horizontal column to understand if the product falls under the expanding or shrinking market category. As explained above, if the growth rate is a positive product, it is categorized as expanding, and if it is negative, the product is shrinking.

Map 3:[511] Map 3 is the extension of Map 2 where new parameters were introduced to further analyze the export situation of Nepal, based on whether the product expanded/shrank in fast pace or slow pace and if the export value of the product increased or decreased in period 2 compared to period 1. The vertical column, in this regard, evaluated if the export value of the product increased or decreased by comparing RCA of period 2 (i.e., 2014 and 2017) to period 1 (2011 - 2013). To make evaluation more comprehensive, the value of RCA was segregated into two sub-parts: RCA >=1 and RCA<1. Products were classified under RCA>=1 if the RCA of the product in period 2 was above or equaled to 1. Similarly, if the RCA value of the product in period 2 was less than 1, it was classified as RCA<1.
In this context, if the proportionate export value of the product in period 2 increased as compared to period 1 (i.e., RCA in period 2 > than period 1), then such products were classified as an increasing trend. Likewise, if the proportionate export value decreased in period 2, as compared to period 1 (i.e., RCA in period 2<RCA in period 1), such products were classified as decreasing trend.

The horizontal column assessed if the global market of the product expanded or shrank at a fast pace or slow pace, considering the time frame of period 2 (2012-2013 and 2014-2017). As described above, if the growth rate of the individual product exceeded the average growth rate, it was classified as a fast pace, and if the opposite was true, the product was classified as a slow pace.

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bag is $2 (i.e. 2 percent). If the total export of world is $1000 and share of bag is $100 (i.e. 10 percent), then the proportional export value of bag of Nepal vis a vis world is 2/10 =0.2.

[508] Please see appendix table 11 for the detailed calculation

[509] RCA>=1 means export potential is high as the proportionate export share of the product is greater than world's share.

[510] If the proportional value of export of a product as compared to the world export of same product is low then such goods are termed to have comparative disadvantage. For instance, let's assume that total export of Nepal is $ 100 and share of bag is $ 2 (i.e. 2 percent). Now if the total export of world is $ 1000 and share of bag is $ 100 (i.e. 10 percent) then the proportional export value of bag of Nepal vis a vis world is 2/10 =0.2. In this case,

[511] Please see appendix table 13 for the detailed calculation.

Appendix 15: HS Code

Period 1 (2010-2013)

Table 1: RCA>1 and Expanding

S.N.	HS Code	S.N.	HS Code	S.N.	HS Code
1	6501	41	3301	81	103
2	6214	42	1515	82	3918
3	1211	43	3926	83	5511
4	8306	44	506	84	814
5	5607	45	6507	85	6309
6	6305	46	202	86	601
7	5302	47	1703	87	6913
8	713	48	6506	88	3923
9	2517	49	1101	89	5603
10	6310	50	6101	90	6702
11	7418	51	6504	91	8308
12	902	52	102	92	104
13	2202	53	6307	93	7308
14	3306	54	2618	94	4823
15	9706	55	7013	95	2309
16	6505	56	9703	96	4601
17	2306	57	5512	97	9702
18	5407	58	9505	98	4819
19	5702	59	6211	99	9615
20	9307	60	909	100	3101
21	906	61	6217	101	6201
22	2009	62	6304	102	9609
23	2302	63	5109	103	8804
24	6117	64	4814	104	3605
25	7306	65	6001	105	4412
26	6308	66	6203	106	1301
27	6301	67	7313	107	7311
28	6116	68	8212	108	6802
29	1902	69	2106	109	6103
30	6404	70	5113	110	9404
31	2403	71	7419	111	3307
32	802	72	4202	112	1204
33	1213	73	6104	113	705
34	5006	74	9701	114	5609
35	9208	75	711	115	4403
36	1008	76	6405	116	4410
37	7117	77	1510		
38	9202	78	4103		
39	7615	79	6210		
40	4104	80	6202		

Source: Author calculations based on data from harvarddataverse.com.

Table 2: RCA>1 and Shrinking

S.N.	HS Code	S.N.	HS Code	S.N.	HS Code
1	405	41	5303	81	7212
2	501	42	5308	82	7217
3	502	43	5310	83	7314
4	704	44	5402	84	7409
5	712	45	5403	85	7506
6	812	46	5505	86	7604
7	908	47	5506	87	7902
8	910	48	5507	88	7903
9	1401	49	5509	89	8446
10	1404	50	5510	90	8478
11	2305	51	5513	91	9205
12	2505	52	5514	92	9206
13	2508	53	5602	93	9207
14	2619	54	5701	94	9601
15	2936	55	5703	95	9606
16	3003	56	5704	96	9608
17	3201	57	5705		
18	3203	58	5802		
19	3401	59	5805		
20	3805	60	5806		
21	3806	61	5905		
22	3812	62	6102		
23	3920	63	6106		
24	4106	64	6110		
25	4107	65	6114		
26	4408	66	6204		
27	4420	67	6205		
28	4501	68	6206		
29	4602	69	6207		
30	4706	70	6208		
31	4707	71	6209		
32	4817	72	6216		
33	4820	73	6502		
34	4909	74	6912		
35	4910	75	6914		
36	5004	76	7001		
37	5104	77	7018		

38	5105	78	7114		
39	5111	79	7210		
40	5112	80	7211		

Source: Author calculations based on data from harvarddataverse.com.

Table 3: RCA<1 and Expanding

S.N.	HS Code	S.N.	HS Code	S.N.	HS Code	S.N.	HS Code
1	101	41	1004	81	2007	121	2918
2	105	42	1005	82	2008	122	2922
3	203	43	1006	83	2101	123	2923
4	206	44	1007	84	2102	124	2925
5	207	45	1102	85	2103	125	2933
6	302	46	1103	86	2104	126	2942
7	303	47	1104	87	2203	127	3002
8	304	48	1105	88	2204	128	3006
9	306	49	1106	89	2205	129	3102
10	307	50	1107	90	2206	130	3208
11	401	51	1108	91	2208	131	3209
12	402	52	1201	92	2301	132	3213
13	403	53	1202	93	2303	133	3214
14	404	54	1205	94	2304	134	3215
15	406	55	1207	95	2308	135	3302
16	407	56	1208	96	2401	136	3303
17	409	57	1209	97	2402	137	3304
18	505	58	1214	98	2506	138	3305
19	507	59	1302	99	2510	139	3402
20	511	60	1509	100	2513	140	3403
21	706	61	1514	101	2515	141	3404
22	707	62	1517	102	2516	142	3407
23	708	63	1518	103	2520	143	3501
24	709	64	1519	104	2521	144	3503
25	710	65	1520	105	2523	145	3504
26	714	66	1521	106	2526	146	3506
27	801	67	1601	107	2530	147	3507
28	804	68	1602	108	2616	148	3606
29	805	69	1604	109	2708	149	3705
30	806	70	1605	110	2710	150	3707

31	808	71	1702	111	2711	151	3808
32	809	72	1704	112	2715	152	3813
33	810	73	1806	113	2803	153	3814
34	811	74	1901	114	2810	154	3820
35	813	75	1903	115	2836	155	3821
36	903	76	1905	116	2845	156	3822
37	904	77	2003	117	2901	157	3823
38	1001	78	2004	118	2902	158	3901
39	1002	79	2005	119	2905	159	3902
40	1003	80	2006	120	2909	160	3909

S.N.	HS Code	S.N.	HS Code	S.N.	HS Code	S.N.	HS Code
161	3910	204	5211	247	7101	290	8211
162	3911	205	5305	248	7103	291	8213
163	3914	206	5306	249	7104	292	8214
164	3917	207	5311	250	7108	293	8301
165	3919	208	5406	251	7109	294	8302
166	3921	209	5502	252	7111	295	8304
167	3922	210	5515	253	7113	296	8307
168	3924	211	5516	254	7115	297	8309
169	3925	212	5604	255	7116	298	8310
170	4005	213	5605	256	7203	299	8405
171	4009	214	5608	257	7214	300	8407
172	4010	215	5804	258	7228	301	8409
173	4011	216	5906	259	7301	302	8411
174	4012	217	5909	260	7304	303	8412
175	4013	218	5910	261	7307	304	8413
176	4015	219	6002	262	7309	305	8414
177	4016	220	6107	263	7315	306	8415
178	4101	221	6113	264	7316	307	8417
179	4102	222	6213	265	7317	308	8419
180	4109	223	6402	266	7318	309	8421
181	4110	224	6602	267	7320	310	8422
182	4201	225	6701	268	7321	311	8424
183	4205	226	6703	269	7323	312	8425
184	4301	227	6704	270	7324	313	8426
185	4302	228	6804	271	7325	314	8427
186	4303	229	6805	272	7326	315	8428
187	4401	230	6806	273	7401	316	8429

188	4402	231	6807	274	7406	317	8430
189	4407	232	6808	275	7505	318	8431
190	4415	233	6809	276	7605	319	8432
191	4416	234	6810	277	7609	320	8433
192	4418	235	6812	278	7610	321	8436
193	4419	236	6815	279	7613	322	8437
194	4421	237	6901	280	7614	323	8438
195	4803	238	6904	281	7616	324	8441
196	4812	239	6907	282	8003	325	8444
197	4813	240	6908	283	8203	326	8449
198	4818	241	6909	284	8204	327	8456
199	5003	242	6910	285	8205	328	8457
200	5108	243	7003	286	8206	329	8458
201	5203	244	7009	287	8207	330	8459
202	5205	245	7010	288	8208	331	8460
203	5206	246	7016	289	8210	332	8461

Source: Author calculations based on data from harvarddataverse.com.

S.N.	HS Code	S.N.	HS Code	S.N.	HS Code
333	8462	376	8705	419	9402
334	8463	377	8707	420	9403
335	8466	378	8708	421	9405
336	8467	379	8709	422	9406
337	8468	380	8711	423	9507
338	8471	381	8712	424	9602
339	8472	382	8714	425	9603
340	8474	383	8716	426	9605
341	8477	384	8802	427	9610
342	8480	385	8803	428	9611
343	8481	386	8805	429	9614
344	8483	387	9002	430	9616
345	8501	388	9003	431	9617
346	8502	389	9004	432	9618
347	8505	390	9006	433	9705
348	8507	391	9010	434	9999
349	8508	392	9011		
350	8509	393	9013		
351	8510	394	9014		
352	8511	395	9015		
353	8512	396	9018		
354	8513	397	9019		
355	8515	398	9020		
356	8516	399	9021		
357	8517	400	9023		
358	8518	401	9024		
359	8521	402	9025		
360	8525	403	9026		
361	8526	404	9027		
362	8530	405	9028		
363	8531	406	9029		
364	8534	407	9030		
365	8536	408	9031		
366	8537	409	9032		
367	8538	410	9101		
368	8542	411	9102		
369	8543	412	9106		
370	8544	413	9108		

371	8546	414	9113		
372	8701	415	9114		
373	8702	416	9303		
374	8703	417	9304		
375	8704	418	9401		

Source: Author calculations based on data from harvarddataverse.com.

Table 4: RCA<1 and Shrinking

S.N.	HS Code	S.N.	HS Code	S.N.	HS Code	S.N.	HS Code
1	106	41	2821	81	3908	121	4904
2	201	42	2827	82	3913	122	4905
3	204	43	2833	83	3915	123	4906
4	205	44	2843	84	3916	124	4907
5	208	45	2844	85	4002	125	4908
6	210	46	2903	86	4004	126	4911
7	301	47	2907	87	4006	127	5002
8	305	48	2912	88	4008	128	5005
9	410	49	2914	89	4014	129	5007
10	508	50	2916	90	4017	130	5101
11	602	51	2929	91	4105	131	5102
12	603	52	2932	92	4111	132	5103
13	604	53	2934	93	4203	133	5106
14	701	54	2941	94	4206	134	5107
15	702	55	3001	95	4304	135	5110
16	703	56	3004	96	4404	136	5201
17	803	57	3005	97	4405	137	5202
18	807	58	3103	98	4409	138	5204
19	901	59	3105	99	4411	139	5207
20	907	60	3204	100	4414	140	5208
21	1109	61	3205	101	4417	141	5209
22	1212	62	3206	102	4503	142	5210
23	1507	63	3207	103	4504	143	5212
24	1516	64	3210	104	4701	144	5301
25	1701	65	3211	105	4801	145	5307
26	1801	66	3212	106	4802	146	5309
27	1904	67	3405	107	4804	147	5401
28	2001	68	3406	108	4805	148	5405
29	2002	69	3505	109	4806	149	5408

30	2201	70	3701	110	4807	150	5501
31	2501	71	3702	111	4808	151	5503
32	2519	72	3703	112	4809	152	5508
33	2601	73	3706	113	4810	153	5601
34	2620	74	3809	114	4811	154	5606
35	2701	75	3810	115	4816	155	5801
36	2712	76	3818	116	4821	156	5807
37	2714	77	3904	117	4822	157	5808
38	2716	78	3905	118	4901	158	5809
39	2804	79	3906	119	4902	159	5810
40	2811	80	3907	120	4903	160	5811

S.N.	HS Code	S.N.	HS Code	S.N.	HS Code	S.N.	HS Code
161	5901	204	7202	247	8215	290	8527
162	5902	205	7204	248	8305	291	8528
163	5903	206	7206	249	8311	292	8529
164	5904	207	7208	250	8401	293	8532
165	5907	208	7209	251	8403	294	8533
166	5908	209	7213	252	8406	295	8535
167	5911	210	7216	253	8410	296	8539
168	6105	211	7219	254	8416	297	8540
169	6108	212	7225	255	8418	298	8541
170	6109	213	7226	256	8420	299	8545
171	6111	214	7302	257	8423	300	8547
172	6112	215	7303	258	8435	301	8548
173	6115	216	7305	259	8439	302	8607
174	6212	217	7310	260	8440	303	8609
175	6215	218	7312	261	8442	304	8706
176	6302	219	7319	262	8443	305	8713
177	6303	220	7402	263	8445	306	8715
178	6306	221	7403	264	8447	307	8903
179	6401	222	7404	265	8448	308	8907
180	6403	223	7405	266	8450	309	9001
181	6406	224	7407	267	8451	310	9005
182	6601	225	7408	268	8452	311	9007
183	6603	226	7410	269	8453	312	9008
184	6801	227	7411	270	8454	313	9017
185	6803	228	7412	271	8455	314	9022
186	6811	229	7415	272	8464	315	9033

187	6902	230	7602	273	8465	316	9105
188	6903	231	7606	274	8470	317	9107
189	6905	232	7607	275	8473	318	9109
190	6911	233	7612	276	8475	319	9201
191	7002	234	7801	277	8479	320	9209
192	7004	235	7804	278	8482	321	9306
193	7007	236	7806	279	8484	322	9503
194	7011	237	7901	280	8485	323	9504
195	7015	238	7905	281	8503	324	9506
196	7017	239	7907	282	8504	325	9508
197	7019	240	8001	283	8506	326	9604
198	7020	241	8002	284	8514	327	9607
199	7102	242	8007	285	8519	328	9613
200	7106	243	8101	286	8520	329	9704
201	7107	244	8112	287	8522		
202	7112	245	8201	288	8523		
203	7118	246	8202	289	8524		

Source: Author calculations based on data from harvarddataverse.com.

Period 2 (2012-2017)

Table 5: RCA>1 and Expanding

S.N.	HS Code	S.N.	HS Code
1	2202	32	6201
2	3926	33	6114
3	713	34	4420
4	6404	35	6101
5	6305	36	704
6	6204	37	5806
7	802	38	6506
8	2403	39	712
9	6505	40	906
10	4202	41	1704
11	6203	42	709
12	910	43	6704
13	202	44	506
14	5607	45	6702
15	2309	46	5905
16	6307	47	6912
17	7604	48	9609
18	1404	49	1008
19	6206	50	6504
20	6116	51	9307
21	3203	52	9601
22	6102	53	5608
23	3805	54	2520
24	6109	55	5805
25	3301	56	8304
26	6202	57	507
27	6211	58	6502
28	9701	59	4304
29	9505	60	5110
30	405	61	5003
31	3918		

Source: Author calculations based on data from harvarddataverse.com.

Table 6. RCA>1 and Shrinking

S.N.	HS Code	S.N.	HS Code	S.N.	HS Code	S.N.	HS Code
1	5701	43	9606	86	4602	128	2526
2	5509	44	6106	87	6216	129	5808
3	5407	45	6304	88	7801	130	6213
4	2009	46	7209	89	808	131	5508
5	7210	47	7615	90	6208	132	7319
6	6214	48	4820	91	2843	133	9704
7	7306	49	1515	92	7001	134	3201
8	908	50	9206	93	7114	135	4004
9	5310	51	9703	94	6209	136	6701
10	902	52	6210	95	5514	137	9605
11	7217	53	3307	96	6913	138	5113
12	6110	54	1703	97	2505	139	4812
13	1211	55	2308	98	4910	140	1903
14	3806	56	6103	99	705	141	3706
15	2306	57	5705	100	604		
16	8306	58	3812	101	7116		
17	3306	59	1101	102	1204		
18	5702	60	6501	103	6914		
19	7409	61	4823	104	6507		
20	9706	62	6405	105	104		
21	4104	63	7419	106	4601		
22	3003	64	6217	107	9614		
23	1902	65	9202	108	9205		
24	3923	66	3401	109	9208		
25	2517	67	6207	110	1103		
26	6104	68	4817	111	4902		
27	4106	69	9304	112	4909		
28	7117	70	7314	113	501		
29	6301	71	5704	114	4105		
30	5602	72	5303	115	7902		
31	6117	73	8212	116	5109		
32	6205	74	8478	117	1213		
33	7013	75	5105	118	6308		
34	5703	76	5510	119	7614		
35	6310	77	4814	120	5302		
36	7418	78	1401	121	1104		

37	2302	79	4408	122	6908		
38	4819	80	5601	123	7313		
39	102	81	3305	124	1102		
40	4707	82	7212	125	9705		
41	7018	83	1904	126	205		
42	4706	84	7305	127	8444		

Source: Author calculations based on data from harvarddataverse.com.

Table 7. RCA<1 and Expanding

S.N.	HS Code	S.N.	HS Code	S.N.	HS Code	S.N.	HS Code
1	2106	43	3005	85	409	127	814
2	9021	44	9026	86	8526	128	801
3	8525	45	3808	87	8421	129	1806
4	5603	46	8473	88	9617	130	9029
5	8803	47	6108	89	3213	131	5811
6	3002	48	9615	90	8532	132	1509
7	9405	49	9306	91	6804	133	714
8	9404	50	4415	92	2004	134	8548
9	8411	51	6911	93	2102	135	4402
10	3304	52	6815	94	502	136	6603
11	9503	53	1901	95	7228	137	812
12	6212	54	3822	96	1207	138	7019
13	8542	55	2008	97	9011	139	5207
14	2203	56	206	98	4806	140	8452
15	8802	57	6306	99	9025	141	5604
16	1905	58	2007	100	8804	142	1801
17	9031	59	7616	101	307	143	4803
18	6002	60	6107	102	8518	144	9004
19	6111	61	6303	103	8516	145	8713
20	9401	62	302	104	809	146	9019
21	3924	63	8206	105	3507	147	7907
22	8308	64	909	106	1106	148	9003
23	7103	65	810	107	2201	149	3818
24	9018	66	8302	108	8508	150	5809
25	8537	67	4407	109	8512	151	7104
26	804	68	9702	110	9616	152	8213
27	703	69	1510	111	5211	153	6909
28	8479	70	9607	112	5807	154	204

29	2103	71	8543	113	8301	155	4417
30	8703	72	7605	114	511	156	8533
31	7323	73	4205	115	8214	157	8510
32	8523	74	813	116	7225	158	106
33	8507	75	6904	117	5516	159	5804
34	4421	76	5609	118	2506	160	6907
35	8211	77	9506	119	5305	161	6910
36	8711	78	1007	120	2715	162	4404
37	6402	79	8307	121	3705	163	5910
38	8428	80	4419	122	5408	164	4401
39	9603	81	7610	123	7009	165	9508
40	8465	82	4201	124	7101	166	803
41	9027	83	8453	125	8202	167	8547
42	904	84	6810	126	9028	168	3407
S.N.	**HS Code**	**S.N.**	**HS Code**	**S.N.**	**HS Code**	**S.N**	**HS Code**
169	8509	183	4416				
170	7609	184	1518	179	3606	193	2521
171	9610	185	1109	180	5301	194	7901
172	306	186	2845	181	7613	195	8903
173	9010	187	7003	182	8451	196	8907
174	907	188	807				
175	1605	189	3821				
176	8470	190	101				
177	9008	191	903				

Source: Author calculations based on data from harvarddataverse.com.

Table 8. RCA<1 and Shrinking

S.N.	HS Code	S.N.	HS Code	S.N.	HS Code	S.N.	HS Code
1	9999	42	3919	83	1302	124	1202
2	4907	43	4901	84	7606	125	8410
3	7113	44	2710	85	8426	126	2003
4	7308	45	9608	86	2303	127	5007
5	3920	46	3907	87	1514	128	8413
6	8429	47	1507	88	7403	129	5505
7	8504	48	2401	89	7506	130	8531
8	3921	49	8708	90	9032	131	8501
9	901	50	9015	91	8716	132	303
10	5402	51	9001	92	3910	133	9030
11	4802	52	2304	93	711	134	8460
12	4810	53	5513	94	3823	135	5401
13	3004	54	4101	95	8443	136	3915
14	4412	55	2402	96	6403	137	8538
15	8517	56	6406	97	701	138	6401
16	9403	57	4418	98	7602	139	2619
17	6302	58	8471	99	8438	140	8521
18	201	59	8407	100	2508	141	3901
19	6802	60	8418	101	6001	142	4303
20	4403	61	7204	102	805	143	9024
21	9022	62	1209	103	2005	144	4813
22	3917	63	5515	104	3402	145	4411
23	406	64	210	105	8455	146	3208
24	4818	65	8536	106	1516	147	2001
25	8544	66	3206	107	3204	148	1301
26	5802	67	8541	108	4821	149	8466
27	5512	68	4410	109	4103	150	5810
28	8534	69	5911	110	7208	151	6112
29	5112	70	8714	111	9014	152	5210
30	103	71	1006	112	4203	153	2803
31	6115	72	2208	113	402	154	602
32	8430	73	8502	114	8483	155	8524
33	6105	74	8446	115	8481	156	8207
34	8474	75	4107	116	4801	157	706
35	6309	76	8704	117	5201	158	8480
36	4804	77	8431	118	7311	159	2712

37	203	78	5111	119	7303	160	5308
38	7326	79	2936	120	8503	161	7607
39	4911	80	601	121	8422	162	8433
40	4016	81	2932	122	702	163	5208
41	4811	82	2804	123	8414	164	2918

S.N.	HS Code	S.N.	HS Code	S.N.	HS Code	S.N.	HS Code
165	4501	209	8412	253	9108	297	4011
166	7407	210	1517	254	8462	298	7216
167	8409	211	6903	255	3909	299	7307
168	9207	212	5102	256	7410	300	2101
169	708	213	3006	257	2907	301	7315
170	7903	214	1005	258	5907	302	9017
171	8477	215	2501	259	4808	303	3405
172	9504	216	2941	260	5501	304	5108
173	5502	217	8701	261	3506	305	8310
174	3212	218	6807	262	8311	306	7118
175	1702	219	3905	263	8535	307	2516
176	7206	220	8205	264	6703	308	2902
177	8459	221	2905	265	7415	309	4414
178	9209	222	8439	266	8514	310	6901
179	5212	223	3105	267	404	311	8805
180	2530	224	6806	268	4906	312	3707
181	8505	225	6215	269	603	313	7401
182	2620	226	8415	270	3925	314	7412
183	8529	227	3101	271	8482	315	2714
184	8511	228	3406	272	8702	316	508
185	7020	229	4110	273	3210	317	8417
186	1519	230	7112	274	4017	318	8406
187	6113	231	3904	275	8401	319	2929
188	4805	232	5101	276	7108	320	2519
189	9002	233	1201	277	2942	321	410
190	2903	234	7321	278	9406	322	7016
191	7115	235	710	279	8201	323	8007
192	7318	236	9113	280	2104	324	5107
193	3303	237	8003	281	6803	325	2922
194	9006	238	7211	282	8405	326	4008
195	8435	239	8424	283	8712	327	4009
196	6902	240	8419	284	5209	328	5506

197	5801	241	9023	285	6801	329	5311
198	8528	242	2523	286	7404	330	5205
199	7214	243	3701	287	208	331	5106
200	2618	244	4409	288	8204	332	301
201	3908	245	7406	289	9007	333	1701
202	1105	246	8461	290	8475	334	3209
203	1602	247	9602	291	4002	335	2923
204	8515	248	5202	292	8002	336	7312
205	3404	249	3906	293	4102	337	9101
206	8485	250	8441	294	4905	338	8432
207	3302	251	8467	295	8208	339	3809
208	8445	252	5203	296	3913	340	9611
S.N.	**HS Code**	**S.N.**	**HS Code**	**S.N.**	**HS Code**	**S.N.**	**HS code**
341	7310	385	2711	429	8203	473	1003
342	8468	386	8423	430	4012	474	5405
343	2836	387	3605	431	4504	475	5306
344	9013	388	2305	432	403	476	3215
345	8705	389	9402	433	8472	477	7804
346	1004	390	8513	434	4010	478	7007
347	5906	391	407	435	4015	479	1001
348	8437	392	1108	436	305	480	7325
349	2204	393	8545	437	3205	481	4809
350	8454	394	6805	438	2006	482	9102
351	401	395	5902	439	2206	483	4109
352	8707	396	505	440	2513	484	5909
353	3505	397	4503	441	8425	485	7317
354	9507	398	2205	442	4807	486	5507
355	4005	399	1212	443	8540	487	4816
356	5006	400	5206	444	8440	488	8519
357	8456	401	7011	445	7806	489	806
358	8215	402	2811	446	8447	490	7905
359	6812	403	7402	447	7111	491	6808
360	8484	404	9033	448	6809	492	1521
361	4111	405	7106	449	2616	493	9005
362	5004	406	4908	450	8436	494	9020
363	3102	407	8539	451	4014	495	2844
364	7408	408	5908	452	2810	496	4301
365	6905	409	5903	453	1208	497	1002
366	7002	410	3001	454	7304	498	7505

367	4903	411	8448	455	4405	499	2821
368	2916	412	2833	456	9106	500	7320
369	3703	413	8530	457	9114	501	6601
370	7203	414	3501	458	8506	502	3810
371	3820	415	8706	459	8442	503	8715
372	2301	416	7612	460	8403	504	9618
373	3902	417	2701	461	7213	505	2601
374	5103	418	1601	462	7226	506	7109
375	5204	419	2827	463	3214	507	5904
376	3403	420	7324	464	2515	508	207
377	811	421	5503	465	8522	509	2909
378	7017	422	8449	466	707	510	9201
379	8609	423	3916	467	7301	511	3702
380	5403	424	7010	468	2716	512	2912
381	4904	425	2925	469	6602	513	304
382	105	426	4302	470	8305	514	3813
383	5309	427	3914	471	5901	515	8416
384	7107	428	8527	472	3922	516	7316

S.N.	HS Code	S.N.	HS Code
517	1107	560	1520
518	7015	561	8001
519	4006	562	9107
520	3207	563	2914
521	2002	564	2708
522	8309	565	5104
523	5005	566	1205
524	5606	567	1214
525	5406	568	2510
526	2934	569	3503
527	7004	570	3504
528	7309	571	4701
529	9303	572	5002
530	4822	573	5511
531	4013	574	7302
532	3911	575	8112
533	8546	576	8464
534	8450	577	8709
535	2933		
536	3814		

537	7411		
538	3211		
539	8427		
540	6811		
541	8607		
542	8458		
543	8210		
544	9109		
545	3103		
546	1604		
547	2901		
548	7219		
549	7405		
550	7202		
551	8420		
552	8457		
553	9105		
554	7102		
555	4206		
556	8463		
557	8101		
558	9613		
559	5605		

Source: Author calculations based on data from harvarddataverse.com.

Table 9. GDP Deflator

Year	GDP Deflator Value
2010	1.04
2011	1.09
2012	1.12
2013	1.15
2014	1.18
2015	1.19
2016	1.21
2017	1.25

Source: Author calculations based on World Bank Data.

Appendix I6: Types of Payments for Ecosystems Services

Types of PES	Category	Description
Spatial Coverage	International	An example includes Reducing Emissions from Deforestation and Degradation (REDD+), whereby developed countries pay developing countries for reducing emissions from deforestation and degradation.
	National	An example is Nepal's Buffer Zone Management Regulation (1996), a PES-type scheme in which the government provides 30–50% of the total revenue generated by a protected area to the buffer zone communities.
	Catchment	In a catchment, PES, in downstream (often water) users, make payments for appropriate management on the upstream area. An example is the Dhulikhel Drinking Water Supply, wherein Dhulikhel municipality and the Bhumidhara Village Development Committee agreed on payments, both in cash and in-kind, to reward upstream communities for their contribution to the conservation of the water source.
	Local	An example is a scheme where communities collectively fund a warden or environmental organization to manage local green space for biodiversity, landscape, and recreational value.
Product-based PES schemes		In a product-based PES scheme, consumers pay a "green premium'" in addition to the market price of a product or service, thereby ensuring an environmentally friendly production process and protection of environmental services. Such products are verified with independent certification.
Financing	Public payment schemes	In these schemes, the government pays the resource managers to protect and enhance ecosystem services on behalf of the public.
	Private payment schemes	These are self-organized private deals in which beneficiaries establish a contract directly with service providers.
	Public-private payment schemes	Such a scheme involves both the government and private sector pay resource managers for the delivery of services.
Payment mechanisms	Performance-based payments	These are payments made based on the actual provision of service. For example, payments are made for a certain amount of carbon sequestration, a measured increase in biodiversity, or an improvement in water quality. Ideally, these types of payments form the basis of all PES schemes.
	Input-based payments	These are payments made based on the implementation of certain land or resource management practices. An example is the creation of buffer strips along watercourses. These types of payments will occur if the buyers are willing to accept that specified inputs/activities will result in the provision of the desired ecosystem service.

Appendix I7: Summary of Payment for Ecosystem Services in Nepal

Ecosystem services	Year	Level	Purpose	Sellers	Buyers	Payment system	Payment conditions
Recreational services/eco-tourism	1970s onwards	Protected area, heritage sites	Generate revenue	Government, community	Domestic and foreign tourists	Entrance fee, lease fee, license fee	Use, no contractual obligations
Water (Shivapuri National Park)	2006	Watershed	Economic benefits	Community	Down-stream users	Not defined	-
Hydropower (Khulekhani watershed)	2006	Watershed	Improve land use practice	Community forest user groups	District Development Committee	Royalty sharing (10%)	Not clearly specified, no contractual obligations
Water lake (Rupa lake, Kaski)	2006	Watershed	Reduce eutrophication and sedimentation	Upstream community	Cooperative	Profit-sharing (10% of the amount)	Not clearly specified, no contractual obligations
Carbon finance (Dolakha and Kavre)	2009	Watershed	Carbon stock improvement	Community forest user groups	Intermediary organization (project)	Cash, grants	Carbon stock improvement, performance-based
Drinking water (Shardu watershed, Dharan)	2009	Watershed	Sustain supply of service	Community	Local government/ municipality	Trust fund established	Not clearly specified, no contractual obligations
Drinking water (Dhulikhel)	2010	Watershed	Sustain supply of service	Local government/ Community	Local government university	Cash, fixed amount per year	Contractual obligations and clearly defined
Biodiversity conservation (Kailali and Bardia)	2011	Landscape	Payment based on conservation outcomes	Community forest user groups	Intermediary organization (project)	Cash, grants	Performance-based, no contractual obligations
Irrigation (Kanchanpur)	2011	Sub-watersheds	Volume of water use	Community forest user groups	Irrigation user group	Cash. Rs 50 per hour of water use	Use, contractual obligations
Landslide control (Kailali)	2011	Forests	Reduce erosion and riverbank cutting	Community forest user groups	Local government	Cash, Rs 10,000 for landslide control	Protection, contractual obligations

The Kulekhani Hydropower is a GON-initiated PES-type project (Khatri 2009), wherein, under the framework of the Local Self Governance Act (1999), the Makwanpur DDC receives 12 percent of the revenue generated from the Kulekhani hydropower facility. Makwanpur DDC endorsed a guideline on benefit-sharing of the royalties, investing part of the revenues in the upstream watershed as payment for the community efforts in conservation (Ojha et al. 2010). Hence, the upstream communities of Kulekhani watershed receive 50 percent of the revenues, while the remaining 50 percent is distributed to downstream and other communities.

The Dhulikhel Drinking Water PES, established in 2010, has the Dhulikhel Municipality, and Bhumidhara VDC agree on payments, both in cash and as in-kind compensations, to reward upstream communities for their contribution to the conservation of the water source (Bhatta & Kotru 2012).

The Haldekhal Irrigation Scheme in Kanchanpur District is a community-based PES mechanism where the Community Forest User Groups in the upstream area established a formal contract with the downstream users so that the latter pays NRS 50 per hour for water use to the former. This money is then invested in sustainable management and conservation of the water source and forests.

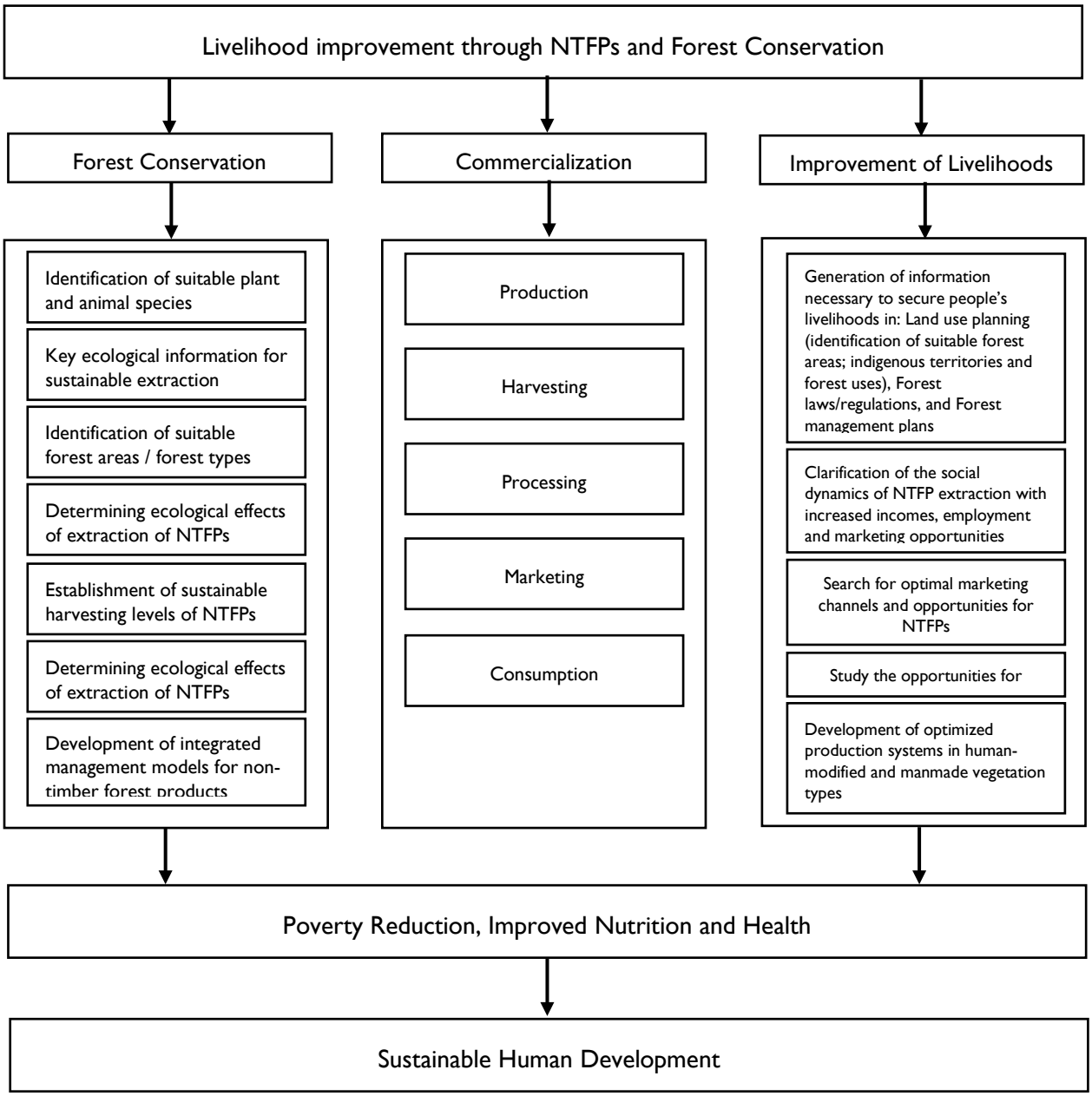
The PES Scheme at Rupa Lake in Kaski District constitutes the local Rupa Lake Rehabilitation and Fisheries Cooperative that compensate upstream communities for their efforts towards forest and soil conservation, which enhances water quality and fish stocks in the lake (Regmi et al. 2009). The case includes direct compensation to community forest user groups and incorporates an effective local benefit-sharing mechanism.

The Buffer Zone Management Regulation (1996) under the National Parks and Wildlife Conservation Act (1973) stipulates that the government will provide 30–50 percent of the total revenue generated by a protected area to the buffer zone communities. Though the provision does not directly adopt the concept of PES, it agrees to provide an incentive to the buffer zone communities for their role in conserving biodiversity (Paudel et al. 2007).

At the Kailali Forest Corridor Conservation, the Western Terai Landscape Complex Project has developed a three-year plan for PES in the western Terai, which is being piloted in three sites, two in the Kanchanpur District (the Barhakunda and Brahmadev lake systems) and one in the Kailali District (Geta VDCs), to promote effective conservation through institutionalizing upstream-downstream linkages.

The Norad REDD+ Pilot Project demonstrated an innovative mechanism for governance and benefit-sharing of REDD+ payments in the community forestry sector, which involves strengthening the capacity of civil society to participate in the REDD+ process. It covered more than 10,000 ha in three watersheds (Dolakha, Chitwan, and Gorkha) and bore positive results in terms of conserving forests. A Forest Carbon Trust Fund (FCTF) was established with clear guidelines on benefits-sharing from carbon sequestration.

Appendix 18: Livelihood Improvement Through NTFPs and Forest Conservation



Source: Adopted from Ros-Tonen M (Ed.) (1999).

Appendix 19: Important MAPS-Related Products of Nepal and Nepal Standards for Cement

Product	Examples of Plant Species Used
Raw plant products	
Medicinal and aromatic	Kutki, chiraito, louthsallo, yarchagumba, panchaunle, pakhanved, harro, barro, amala, neem, silajit
Spices and flavoursflavors	Cinnamon, timur, amala, juniper, large cardamom
Wild mushrooms and health foods	Morels, kurilo
Dyes and tans	Padamchal, chutro, majitho, louthsallo, banjh, thingresallo, okhar
Products after value-added processing	
Essential oils and extracts	Jatamansi, sugandhawal, titepati, sunpati, juniper, wintergreen, sungadhakokila, abies, deodar, lauthsalla
Finished products	
Ayurvedic preparations (medicines, tonic, nutrient supplements)	Kutki, Chiraito, Louthsallo, yarchagumba, panchaunle, pakhanved, harro, barro, amala, neem, silajit
Traditional medicines	Kutki, Chiraito, Louthsallo, yarchagumba, panchaunle, pakhanved, harro, barro, amala, neem, silajit
Incense	Jatamansi, juniper, sunpati, mahuwa
Herbal teas	Thyme, gurjo, gandhaino, tulsi, mint, cinnamon.
Personal care products (soaps, shampoo, creams)	Pangar, chiuri, ritha, amala, sikakai, naru

Appendix 20: Nepal Standards for Cement, Steel and Sand

Nepal Standards for Cement Used for Structural Purposes in Construction

- NS 37:2040 Jute bag for cement
- NS 49:2041 Ordinary portland cement Second Amendment
- NS 51:2041 Sand for cement testing
- NS 85:2042 Powder cement paint
- NS 119:2042 Hollow cement concrete block
- NS 123:2043 Method of Physical tests for hydraulic cement
- NS 384:2054 Portland slag Cement
- NS 385:2054 Portland Pozzolana Cement
- NS 386:2054 Method of sampling of Hydraulic cement
- NS 392:2054 Cement concrete Flooring Tiles
- NS 394:2054 HDPE woven sacks for packing cement
- NS 415:2056 Test method of fresh concrete
- NS 499:2063 Integral waterproofing compounds for cement Mortar and concrete – specification
- NS 532:2070 Method of chemical analysis of hydraulic cement

Nepal Standards for Steel Used for Structural Purposes in Construction

- NS 84:2042 Mild steel rod
- NS 180:2045 Dimensions for hot rolled steel sections
- NS 191:2046 Deformed steel bars and wires for concrete reinforcement
- NS 192:2046 Methods for Brinell Hardness test for steel
- NS 193:2046 Methods for Vickers Hardness test for steel
- NS 194:2046 Methods for rockwell Hardness test for steel
- NS 213:2046 Methods for determination of mass of zinc coating on zinc coated steel and iron articles
- NS 234:2047 Cold rolled light structural steel sections
- NS 389:2054 Part 8 – Steel work and iron Work
- NS 413:2056 Tensile bend test of steel rods
- NS 414:2056 Terminology used in iron and steel
    - NS 414:2056 Part 1 - Related to making steel
    - NS 414:2056 Part 2 - Hot Rolled Steel Products
    - NS 414:2056 Part 3 - Steel sheet and strip
    - NS 414:2056 Part 4 - Bright steel bar and steel wire
    - NS 427:2058 Steel tube for structural use
- NS 493:2062 Specification for steel tubes for mechanical and general engineering purposes

Nepal Standards for Sand

- NS 1:2035 Brick First Amendment
- NS 389:2054 Part 3 – Brickwork

Appendix 21: Importance Factors of Important Buildings

Type of Building	Factor
Monumental Buildings	1.5
Essential facilities that should remain functional after an earthquake • Hospitals and other medical facilities • Fire and Police stations • Emergency vehicle shelters/garages • Food storage structures • Emergency relief stores • Power stations (including standby power-generating equipment or essential facilities) • Water works and water towers • Radio and television facilities • Telephone exchanges and transmission facilities • Offices and residential quarters for senior personnel required for central and district-level rescue and relief operations (ministers, secretaries, police and army chiefs; chief district officers, local development officers and district development committees' chairmen, district-level army and police chiefs) • Places of assembly (schools, colleges, cinemas, convention halls, temples, dharmsalas)	
Distribution facilities for gas or petroleum products in urban areas	2.0
Structures for support or containment of dangerous substances (acids, toxic substances, etc.)	2.0
Other structures	1.0

Appendix 22 Structure Conduct Performance Framework Method

For this study, the study team assessed the construction SCM strategy basing its methodology as prescribed by (Darko, Owusu-Manu, Pärn, & Edwards, 2016)[512] and the Structure Conduct Performance Framework[513] and modify it as per the country requirements. The details of the method are as follows:
Literature review: To initiate the study, the study team first conducted desk research to track down relevant pre-published data from primary sources as well as secondary sources for the relevant information on government regulations, policies, and actions aimed at construction materials supply chain in Nepal. This was essential for the identification of potential supply chain risk factors in this sector.

Data collection: Based on the findings of the literature review and potential supply chain risks, a survey questionnaire was prepared based on which qualitative surveys were performed. Qualitative surveys, which are categorized into key informant interviews and consultative meetings, were conducted.

The study's target population were the contractors and suppliers in the construction industry, who have extensive experience in SCM. Because of the limited reliable information on the sampling frame for this study, a non-probability sampling method (i.e. snowball sampling method) was used to obtain a reasonable sample size.

Data assessment: The advisor proposed by the study team for disaster risk management validated the information obtained from the literature review and qualitative survey. The outcomes were thus used to draw insights on the various aspects of private sector engagement in the construction SCM.
The methodology to assess the disaster risk financing strategy used a diagnostics tool that drew on a modified version of the "W&W Development Framework."[514] It focused on six areas of relevance for the development of disaster insurance and capital market solutions:

- Government policy in the development of risk transfer instruments[515] for DRF
- Economic conditions that influence the decision for retaining the risk
- Disaster risk product availability and affordability
- Credibility of the private sector offering risk transfer solutions
- Social protection policy
- Unlicensed competition

The tool, a series of questions, assessed the current state of the enabling environment for DRF and gaps and opportunities for enhancement. The target population of the assessment were:

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[512] Darko, Amos, De-Graft Owusu-Manu, Erika Pärn, and David J. Edwards. 2016. "Identifying Potential Critical Risks in the Construction Supply Chain – An Empirical Study in Ghana." Mindanao Journal of Science and Technology 14: 79-100.
[513] The details of the Structure Conduct Performance Framework are provided in the methodology for health sector.

[514] The W&W Development Framework has been used on several occasions by Rodolfo Wehrhahn, one of the assessors, to determine barriers to an enabling environment in work done for ADB, the International Monetary Fund, and the World Bank. The relevant areas for an enabling environment as determined in this framework follow from Wehrhahn (2010).

[515] Risk transfer instruments include international assistance, catastrophe bonds and other insurance linked securities and insurance/reinsurance.

- Property owners who are directly impacted by the incidence of a disaster.
- Insurers and Reinsurers who provide financial coverage to residential and commercial property owners.
- Capital Markets that devise financial instruments.
- Credit rating agencies influence the credibility of the BFIs.
- State insurance regulatory authority that is responsible for solvency regulation and rate regulation
- Other – lenders, real estate agents, developers, engineers, contractors, other service providers.

The detailed application of the diagnostic tool is detailed systematically in the steps below:

- Background information on the DRF strategy of the country was gathered from publications, government websites, insurance, reinsurance industry documents, and capital market analyses.
- The background information was then complemented using extensive questionnaires with open questions on areas relevant to the DRF strategy and instruments used in the country. These questionnaires were sent to relevant stakeholders for their inputs.
- Key Informant Interviews took place with selected stakeholders from both the public sector and the insurance, reinsurance, and capital market stakeholders, including actuaries, rating agencies, brokers, and auditing firms. These interviews enhanced and completed the information gathered through the desk analysis and the questionnaire responses.
- The comprehensive information was then analyzed and gaps between international best practices and current practices were identified. The sectoral expert proposed by beed for disaster risk management validated the findings and ensured quality assurance in the outcomes.
- Based on the findings, recommendations were provided on roles that the public sector, private sector, and development partners could play to enhance the use of financial and insurance products to increase disaster resilience.

Appendix 23 Measure of Quality in Dealing with Construction Permits

Indicators	Nepal (rank 107 of 190 countries)	Hong Kong (rank 1 of 190 countries)
Building quality control index (0-15)	10	15
Quality of building regulations index (0-2)	2	2
How accessible are building laws and regulations in your economy? (0-1)	1 Available online; Free of charge.	1 Available online; Free of charge; In official gazette.
Which requirements for obtaining a building permit are clearly specified in the building regulations or on any accessible website, brochure or pamphlet? (0-1)	1 List of required documents; Fees to be paid; Required preapprovals.	1 List of required documents; Fees to be paid; Requiredpreapprovals.
Quality control before construction index (0-1)	1	1
Which third-party entities are required by law to verify that the building plans are in compliance with existing building regulations? (0-1)	1 Licensed architect; Licensed engineer; Private firm.	1 Licensed architect; Licensed engineer; Private firm.
Quality control during construction index (0-3)	3	3
What types of inspections (if any) are required by law to be carried out during construction? (0-2)	1 Inspections by inhouse engineer; Inspections at various phases.	2 Inspections by inhouse engineer; Inspections by external engineer or firm; Unscheduled inspections; Inspections at various phases; Risk-based inspections.
Do legally mandated inspections occur in practice during construction? (0-1)	1 Mandatory inspections are always done in practice.	1 Mandatory inspections are always done in practice.
Quality control after construction index (0-3)	3	3
Is there a final inspection required by law to verify that the building was built in accordance with the approved plans and regulations? (0-2)	2 Yes, final inspection is done by government agency.	2 Yes, final inspection is done by government agency; Yes, inhouse Engineer submits report for final inspection; Yes, external engineer submits report for final inspection.
Do legally mandated final inspections occur in practice? (0-1)	1 Final inspection always occurs in practice.	1 Final inspection always occurs in practice.
Liability and insurance regimes index (0-2)	0	2
Which parties (if any) are held liable by law for structural flaws	0	1

Indicators	Nepal (rank 107 of 190 countries)	Hong Kong (rank 1 of 190 countries)
or problems in the building once it is in use (Latent Defect Liability or Decennial Liability)? (0-1)	No party is held liable under the law	Architect or engineer; Professional in charge of the supervision; Construction company.
Which parties (if any) are required by law to obtain an insurance policy to cover possible structural flaws or problems in the building once it is in use (Latent Defect Liability Insurance or Decennial Insurance)? (0-1)	0 No party is required by law to obtain insurance.	1 No party is required by law to obtain insurance; Insurance is commonly taken in practice.
Professional certifications index (0-4)	2	4
What are the qualification requirements for the professional responsible for verifying that the architectural plans or drawings comply with existing building regulations? (0-2)	1 University degree in architecture or engineering; Being a registered architect or engineer.	2 Minimum number of years of experience; University degree in architecture or engineering; Being a registered architect or engineer; Passing a certification exam.
What are the qualification requirements for the professional who supervises the construction on the ground? (0-2)	1 University degree in engineering, construction or construction management; Being a registered architect or engineer.	2 Minimum number of years of experience; University degree in engineering, construction or construction management; Being a registered architect or engineer; Passing a certification exam.

Source: World Bank Ease of Doing Business, 2019. https://www.doingbusiness.org/en/rankings.

Appendix 24: Procedures in Dealing with Construction Permits

Procedure	Time	Cost
Obtain a soil study report. *Agency*: Private Engineering Firm. The Village Development, Urban Planning & Building Relating Fundamental Construction Standards 2015 provides that building falling under category A and B are required to conduct soil test as per the Soil Test Directive of the Ministry of Urban Development. Sub-section 8(b) of the Building Act 1998 provides that Buildings with plinth area of more than One Thousand square feet, with more than Three floors including the ground floor or with structural span of more than 4.5 meters falls under Category B. The warehouse in the case study has only two levels but since the total surface area of the same is approximately 1,300.6 square meters which is more than One thousand Square feet so it is necessary to carry out soil test for building such warehouse.	32 days	NPR 137,500
Obtain a topographical map. *Agency*: Private Engineering Consultancies. Topographic Surveys are used to identify and map the contours of the land plot. Its purpose is to serve as a base map for the design of a building. It also shows the boundary lines and is used by designers to accurately show the required setbacks. The new bylaws state that buildings up to 10m high have to leave a minimum of 1.5m setback from the border of the land plot. The Department of Surveys makes topographical maps available to the public for a fee for NPR 150 per sheet. Construction companies however often need to hire a private engineering consulting firm for a more detailed map to show setbacks and boundary lines.	5 days	NPR 20,500
Obtain a cadastral extract from the Survey Office. *Agency*: Survey Office. The cadastral extract is obtained at the Land Revenue Office prior to applying for the building permit.	1 day	NPR 100
Request and obtain temporary building permit. *Agency*: Kathmandu Metropolitan City (KMC). The Kathmandu Metropolitan City (KMC) has implemented an online system the Electronic - Building Permit System (E-BPS), allowing for building permit and all design plans and relevant documents to be submitted online. The applicant has the option of tracking the status of their application online. Nepal has a 3-level building permit. • First is the permit up to the plinth level. • Second is the permit to complete the structure of the building • Third is the completion level.	30 days	NPR 282,000

Procedure	Time	Cost
BuildCo must submit the following documents along with the building permit application: • Identity document of the owner (or company registration certificate). • Certification by a registered architect or engineer. • Cadastral extract. • Proof of land ownership/lease. • Building plans. • Location plan. • Site plan. • Proof of tax payment. • Structural plans (not required for buildings with ground coverage area of less than 1,000 sq. ft. and less than 3 stories). In addition to the building permit fee, the Urban Development Department also charges a designer fee of NPR 2,000.00. The project designer must be licensed by the Department. The license is called Certificate of Designer and is renewed every year at the Municipality. The annual fee is NPR 3,000.00. The Municipality charges an additional NPR 2,000.00 for each building design.		
Receive on-site inspection. *Agency*: Ward Office. The Ward Office visits the site and distributes a notice to neighbors.	1 day	No charge
Conduct plinth level inspection. *Agency*: Municipality or Town Development Committee. Before issuance of the construction permit, an on-site inspection is conducted by an official from the Municipality or the Town Development Committee to ensure that the construction (up to plinth level) conforms to the approved drawings. BuildCo's engineer or architect must be present during the inspection.	4 days	No charge
Request and obtain the permanent construction permit. *Agency*: Municipality or Town Development Committee. After inspecting the construction site, the Municipality's engineer writes a "site report" and issues a permit for construction above the plinth level.	21 days	No charge
Request and receive final inspection from the municipality. *Agency*: Kathmandu Metropolitan City (KMC). Before issuance of the completion certificate, the Municipality conducts an on-site inspection to check if the construction conforms to the approved drawings. An inspector visits the site in 2 -- 3 days after the request for completion certificate and writes a report to the more senior engineer.	5 days	No charge

Procedure	Time	Cost
Obtain a completion certificate. *Agency*: Kathmandu Metropolitan City (KMC). Four signatures are required on the completion certificate: • Junior engineer. • Senior engineer. • Chief engineer of Kathmandu Metropolitan City. • Departmental engineer.	10 days	No charge
Request water and sewage connection. *Agency*: Kathmandu Upatyaka Khanepani Limited (KUKL). The application for water supply connection is submitted to Kathmandu Upatyaka Khanepani Limited (KUKL) with all the required documentation. For sewerage there is no need to apply to KUKL. KUKL will review the documentation and provide a recommendation letter allowing road cutting to the Division of the Department of Roads (DoR) for a sewerage connection.	1 day	No charge
Receive inspection from the Drinking Water and Sewerage Offices. *Agency*: Kathmandu Upatyaka Khanepani Limited (KUKL). After receiving the application for water connection, KUKL sends a technical team for site inspection and prepares the cost estimate for the connection.	1 day	No charge
Obtain water and sewage connection. *Agency*: Kathmandu Upatyaka Khanepani Limited (KUKL). The customer is expected to acquire all pipes and materials for the water and sewerage connection. A technical team will make the connection to the distribution line and install the water meter one to two weeks after the inspection is conducted.	14 days	NPR 23,549

Source: World Bank Ease of Doing Business. https://www.doingbusiness.org/en/rankings).

Appendix 25: Public Procurement of Drugs in Nepal

A significant fraction of the national health budget in Nepal is used for the purchase of essential drugs. Drug procurement involves various steps, such as information collecting, advertisement (tender notice), contact with suppliers, tendering, quotations, and direct procurement with an aim to provide quality drugs at the lowest possible cost.

In the centralized structure before the introduction of federalism in Nepal, the Logistics Management Division (LMD), under the MoHP, was primarily responsible for the supply of essential medicines, equipment, vaccines and contraceptives to the government hospitals and government-owned health care units over the country. This happened through the five Regional Medical Stores (RMSs) across the country, namely, Biratnagar, Hetauda, Butwal, Nepalgunj and Dhangadhi, that would ultimately distribute the medical supplies to primary health care centers, health posts and sub-health posts in the districts of their respective jurisdiction. Further, the zonal, regional and tertiary hospitals could also procure medicines for their consumption based on the grants, government funds, and their revenues. Under the federal structure, however, the district structure is non-existent, and the provincial governments and local governments are functional. In this context, the procurement takes place in four ways:

1. ***Central procurement:*** The LMD currently functions in two aspects – i) it acts as the key purchasing body for Province 3 and Province 2, and distributes the procured items through the Central Medical Store, Pathlaiya, Bara, and ii) the act of procurement and distribution of vaccines and contraceptives still lies in the jurisdiction of the LMD for the entire country.
2. ***Provincial Government procurement:*** The Provincial Ministries of Health receive funds from the Federal Government of Nepal, based on which they invite bids from eligible bidders for the procurement of medicines that are delivered at the respective RMS, under national competitive bidding procedures specified in the Public Procurement Act and Regulations. This, however, does not apply for vaccines and contraceptives.
3. ***Local Government:*** Like the provincial government, there are 753 local governments that can now purchase medicines, apart from contraceptives and vaccines, and distribute them through the government health units in their constituencies.
4. ***Hospitals:*** The government-owned hospitals can also procure medicines on their own, depending on their requirements and specializations.

Challenges:

Some of the issues identified by the MoHP in the Procurement Improvement Plan on government procurement and supply chain management are listed below:

1. Weak linkage and coordination in pre-bid information systems.
2. Insufficient procurement planning and monitoring systems.
3. Lack of standardized procurement process for the health sector.
4. Ineffective contract management.
5. Lack of post-bid information practices.
6. Weak supply chain management.
7. Weak warehousing practices.
8. High audit queries in procurement.
9. Weak professional capacity.

In this fiscal year (FY 2018/19), the GON provided NPR 56.41 billion to the MOHP, out of which NPR 4.2 billion (7.4%) was allocated to provincial governments and NPR 18.15 billion (32.2%) allocated to Local Governments and NPR 34.08 billion (60.4%) remains at the MOHP or the federal level. Almost 38 percent of the health budget is allocated as hospital grants, followed by 25 percent of the health budget in wages and salaries. Capital construction accounts for 14 percent of the total health budget. Most of the health budget under wages and salaries, support services, capacity building, and program activities has been devolved to Local Governments. At the same time, most of the health budget for medicines, grants to hospital, capital construction, and capital goods remain at the federal level. It is to be noted that 93 percent of the budget for equipment remains at the federal level, and the majority of this is allocated to purchase cancer equipment. Almost 37 percent of the budget, allocated under free care, is allocated to maternal and child healthcare, followed by free health care (26 percent) and free treatment of the target population (23 percent).

Appendix 26: Marginalized Groups and Poor

Marginalized groups: As per the Constitution of Nepal, marginalized means, "communities that are made politically, economically and socially backward, are unable to enjoy services and facilities because of discrimination and oppression and of geographical remoteness or deprived thereof and are in lower status than the human development standards mentioned in Federal law, and includes highly marginalized groups and groups on the verge of extinction".

Definition of poor population: As per The Poor Household Identification and Identity Card Distribution Directive, there are multiple factors taken into account that classify the poor population. Some of these factors are – family's size, average age, education level, state of the house, household facilities, total assets, income level, among others,

Appendix 27: Detailed Methodology for Returns on Education

1. Data Collection

The data used in this analysis was retrieved from Nepal Labor Force Survey (NLFS) 2017/18. The Central Bureau of Statistics (CBS), Nepal implemented the survey. It is the third comprehensive Labor Force Survey which the Government of Nepal[516] has conducted, and it contains information on labor market indicators, like the household unit, education, wage, and occupation, among others. The survey covers information from 77,638 individuals from 18,000 household units. The sample was divided into seven strata based on the province and, therefore, represents the country's population. The major variables used in this analysis are listed below.

Table 1: Definitions of Variables

Variables	Definition
Personid	Unique ID of an individual
Nsced	Education level
Logincome	Natural logarithm of monthly income
Experience	Years of experience
Male	Male
Female	Female sample
Training	Sample with vocational training
Com	Sample with access to a computer
Int	Sample with access to internet
wt_prov_ind_year	Annual provincial individual weight

For the analysis, data was segregated based on the employment status (for those over 15 years), and the final data set had 8,172 data. To conduct the Mincer equation data, only employed status was considered. The data was further filtered based on the requirements of the specific models and adjusted to the relevant weight by using annual province individual weight.

[516] Third survey followed NFFS I in 1998/99 and NLFS II in 2008.

2. Estimates of Data

As summary statistics are useful in evaluating the key characteristics of data, this section provides the summary statistics of important variables used in the equation.

Education Level

Table 2: Summary Statistics (Education Level)

nsced	Feq.	Percent	Cum.
Illiterate (No Schooling)	1,699	20.42	20.42
Early Childhood Education	11	0.13	20.56
Literate(Levelless)	230	2.81	23.37
Lower Basic	2,217	27.13	50.50
Basic	490	6.00	56.50
Lower than Secondary	1,516	18.55	75.05
Secondary	993	12.15	87.20
Bachelor or Equivalent	683	8.36	95.56
Masters and above	356	4.36	99.91
Professional	7	0.09	100.00
Total	8,172	100.00	

As shown in Table 3, 20 percent of the sample unit was illiterate, whereas 27 percent had lower basic education. The lowest was professionals at 0.09 percent, followed by early childhood at 0.13 percent.

Table 3: Summary Statistics (Mean Earnings)

Mean Earnings by Education Level

nsced	mean	P50
Illiterate (No Sc	14065.19	12166.67
Early Childhood	15475.72	16000
Literate(Levelle	15996.36	15000
Lower Basic	17765.79	15208.33
Basic	17247.22	15208.33
Lower than Secon	16955.76	15208.33
Secondary	16937.41	15208.33
Bachelor or Equ	23236.83	22500
Masters and abov	30706.58	30000
Professional	35906.63	35000
Total	17808.68	15208.33

As shown in Table 4, the highest earners were professionals with mean incomes of NPR 35,906 and median earning of NPR 35,000. As expected, the illiterate category had the lowest incomes with NPR 14,065 and the median earning of NPR 12,166.

Education Level by Gender

Table 4: Summary Statistics (Education by Sex)

	B01.Sex		
nsced	Male	Female	Total
Illiterate (No Schooli	1,059	610	1,669
Early Childhood Educa	9	2	11
Literate(Levelless)	155	75	230
Lower Basic	1,915	302	2,217
Basic	413	77	490
Lower than Secondary	1,167	349	1,516
Secondary	582	411	993
Bachelor or Equivale	461	222	683
Masters and above	271	85	356
Professional	5	2	7
Total	6.037	2,135	8,172

As shown in Table 4, out of the total sample, approximately 74 percent were males and 26 percent female. For males, lower basic education level was a plurality of 31 percent followed by education between secondary and basic education (19 percent) and then illiterate (18 percent). For females, the highest proportion of education level was illiterate (29 percent), followed by secondary (19 percent), between secondary and basic education (16 percent) and lower basic only (14 percent).

Mincer Equation

Over the last half-century, labor economics has undergone a major transformation. As such, labor is no longer considered as an amalgam of homogenous workers in an aggregate economy. Instead, labor is the conglomerations of heterogeneous workers differing on productivity and resulting earnings. In this case, the study uses the mincer equation to calculate the individual's earning based on education and years of experience.

Assumptions of the Mincer Equation

While the approach is ubiquitously used in the empirical research of labor economics, the approach, however, relies on the assumption that individuals make schooling decisions to maximize the present value of lifetime earnings.

3. Empirical Findings

Model 1

As the objective of Model 1 was to analyze the average return to education based on an individual's education attainment level and experience, the data for the level of education and years of experience was extracted. The data was then matched with personal IDs using the merge command in Stata. With the data in place, the equation was run to calculate average return (as shown in Table 5) to education. The equation contained parameters, including experience, experience 2, nsced, and weight.

Table 5. Output for Model 1

Source	SS	df	MS
Model	263.70651	3	87.90217
Residual	2222.2743	8123	.273578025
Total	2485.98081	8126	.305929216

Number of obs	8127
F(3, 8123)	321.31
Prob > F	0.0000
R-squared	0.1061
Adj R-squared	0.1057
Root MSE	.52305

logincome	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
experience	.0067092	.0071304	0.94	0.347	-.0072681	.0206866
experience2	.0018328	.0006588	2.78	0.005	.0005414	.0031243
nsced	.0613081	.0023322	26.29	0.000	.0567364	.0658799
_cons	9.245257	.0163677	564.85	0.000	9.213172	9.277342

As shown in Table 5, the log income is the dependent variable. The equation has three independent variables, including experience of the individual (experience), experience square (experience2), and education level (nsced). As per the statistical characteristics, all the variables, except for experience, are statistically significant at 1 percent significance level, as shown by the low p-value. In other words, the hypothesis was tested using the above model wherein the null hypothesis got rejected.

Null hypothesis: Income does not get affected by the additional attainment of education level.
Alternative hypothesis: Income gets affected by the additional attainment of education level.

Model 1.1

As model 1 analyzed the average return without segregating gender, Model 1.1 was developed to understand the average return based on gender. From the final file, data was segregated as per the gender, so two data sets were created accordingly - one for females and another for males. The data set for males had 6,010 cases, whereas the dataset for female, it had 2,117 cases.

Based on that data set, the following equation was run separately to calculate the return to education based on gender.

Output for Males

Table 6. Output for Model 1.1 (Males)

Source	SS	df	MS
Model	159.292705	3	53.0975684
Residual	1412.03519	6006	.235104094
Total	1571.3279	6009	.261495739

Number of obs	6010
F(3, 6006)	225.85
Prob > F	0.0000
R-squared	0.1014
Adj R-squared	0.1009
Root MSE	.48488

logincome	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
experience	.0170096	.0077839	2.19	0.029	.0017503	.0322689
experience2	.0006185	.0007143	0.87	0.387	-.0007818	.0020188
nsced	.057203	.0026351	21.71	0.000	.0520373	.0623687
_cons	9.364144	.0185753	504.12	0.000	9.327729	9.400558

As shown in Table 6, the log income is the dependent variable. The equation has three independent variables, including experience of the individual (experience), experience square (experience2), and education level (nsced). As per the statistical characteristics, variable nsced is statistically significant at 1 percent significance level (as shown by the low p-value) though experience and experience2 are not statistically significant at 1 percent significance level. In other words, the following hypothesis was tested using the above model wherein the null hypothesis was rejected.

Null hypothesis: The income of the male population is affected by the additional attainment of education level.
Alternative hypothesis: The income of the male population is affected by the additional attainment of education level.

Output for Females

Table 7: Output for Model 1.1 (Female)

```
. reg logincome experience experience2 nsceed
[aw=wt_prov_ind_year] if age>=15
wgt is 1.0178e+06)
```

Source	SS	df	MS
Model	79.4328113	3	26.4776083
Residual	584.396566	2113	.276571967
Total	663.829378	2116	.313718988

```
Number of obs =      8127
F( 4, 8122)   =    242.07
Prob > F      =    0.0000
R-squared     =    0.1065
Adj R-squared =    0.1061
Root MSE      =    .52295
```

(sum of

```
Prob > F      =    0.0000
R-squared     =    0.1197
Adj R-squared =    0.1184
Root MSE      =    .5259
```

logincome	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
experience	-.0337742	.0137701	-2.45	0.014	-.0607786	-.0067699
experience2	.0055662	.0012971	4.29	0.000	.0030225	.00811
nsced	.0654897	.0042139	15.54	0.000	.0572259	.0737536
_cons	9.020703	.0290272	310.77	0.000	8.963778	9.077627

As shown in Table 7, the log income is the dependent variable. The equation has three independent variables, including the experience of the individual (experience), experience square (experience2), and education level (nsced). As per the statistical characteristics, variables nsced and experience2 are statistically significant at 1 percent significance level (as shown by the low p-value); however, the variable experience is not (though it is significant at 5 percent significance level). In other words, the following hypothesis was tested using the above model wherein the null hypothesis was rejected.

Null hypothesis: The income of the female population is not affected by the additional attainment of education.
Alternative hypothesis: The income of the female population is affected by the additional attainment of education.

Model 1.2

Similarly, the average return to education can differ based on training. In other words, an individual could enhance his/her earning by going through specific vocational training. So, to understand the impact of training on labor market opportunities of individuals, in particular on earning, Model 1.2 was introduced.

To obtain a return to education using vocational training as an interaction term, data was filtered based on individuals with vocational training. As the output was not significant[517] even at a 10 percent significance level (when considering the vocational training of fewer than five months), the data set was further filtered according to the cases with vocational training of more than six months. By doing so, output was significant at a 5 percent significance level.

Table 8: Output for Model 1.2

[517] That means the equation didn't support the relationship between vocational training and increment in income was not robust.

Source	SS	df	MS
Model	264.800094	4	66.2000235
Residual	2221.18071	8122	.273477064
Total	2485.98081	8126	.305929216

logincome	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
experience	.0070475	.0071311	0.99	0.323	-.0069312	.0210262
experience2	.0017873	.0006591	2.71	0.007	.0004953	.0030792
nsced	.0601153	.0024069	24.98	0.000	.0553972	.0648334
nscedxtraining	.0069799	.0034905	2.00	0.046	.0001377	.0138222
_cons	9.247933	.0164193	563.24	0.000	9.215747	9.280119

As shown in Table 9, the log income is the dependent variable. The equation has three independent variables, including experience of the individual (experience), experience square (experience2), and education level (nsced). As per the statistical characteristics, variables nsced and experience2 are statistically significant at 1 percent significance level (as shown by the low p-value); however, the variable experience is not (though it is significant at 5 percent significance level). In other words, the following hypothesis was tested using the above model wherein the null hypothesis was rejected.
Null hypothesis: The income of a person is not affected by attending/participating in vocational training.
Alternative hypothesis: The income of a person is affected by attending/participating in vocational training.

Model 2

Model 1 analyzed the average return to education[518] without distinguishing the earning with additional years of education. Therefore, Model 2 was conceptualized to overcome the constraint of Model 1 by accounting marginal return across the education levels.

To obtain the output, dummy variables were created, as defined in the Table 10, for each level of education, an OLS regression was run based on the relevant parameters, including experience, experience2, and related dummy variables.

The dummy variable for each level of education was created, as shown in the table below.

[518] Considering all level at once as an independent variable.

Table 9: Definition of Dummy Variables

Variable Name	Variable Name Used in Model	Grade Completion	Years of Schooling in That Particular Level
Dummy =1 if education level=Illiterate	dI		
Dummy =1 if education level=Early Childhood Education	dECS	Home education equivalent to Nursery/LKG/UKG	3
Dummy =1 if education level=Literate Levelless	dL	Nursery/LKG/UKG	3
Dummy =1 if education level=Lower Basic	dLB	1-7	7
Dummy =1 if education level=Basic	dB	8	1
Dummy =1 if education level=Lower Secondary	dLS	9-10	2
Dummy =1 if education level=Secondary	dS	12	2
Dummy =1 if education level=Bachelor	dBac	Bachelor	3
Dummy =1 if education level=Master (and PhD)	dMas	Master	2
Dummy=1 if education level= Professional Degree	dP	Professional degree	Mostly 4-5

After creating the dummy variables, the following equation was used to evaluate the cumulative return to education across the education level (illiterate was used as a reference point).
Now, to calculate the marginal return, the following formula was used:

$R_m=(a_i-a_{i-1})/S_K$
Wherein $R_{m=}$ Marginal return to education.
$a_{i=}$ Return on education at i-th level.
$a_{i-1=}$ Return on education at (i-1)th level.
$S_{K=}$ years of schooling at a particular level.

Table 10: Output for Model 2

Source	SS	df	MS
Model	363.076556	11	33.0069597
Residual	2122.90425	8115	.261602495
Total	2485.98081	8126	.305929216

Number of obs	8127
F(11, 8115)	126.17
Prob > F	0.0000
R-squared	0.1460
Adj R-squared	0.1449
Root MSE	.51147

logincome	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
experience	.0028535	.0069867	0.41	0.683	-.0108423	.0165492
experience2	.002009	.0006451	3.11	0.002	.0007443	.0032736
dECS	.1485274	.1356423	1.09	0.274	-.1173663	.4144211
dL	.1425292	.0360754	3.95	0.000	.0718121	.2132463
dLB	.2672058	.0167255	15.98	0.000	.2344196	.2999921
dB	.2195812	.0277158	7.92	0.000	.1652511	.2739113
dLS	.2047749	.0181348	11.29	0.000	.1692262	.2403237
dS	.1973664	.0201304	9.80	0.000	.1579057	.2368271
dBorE	.4975013	.0216843	22.94	0.000	.4549946	.5400081
dMorA	.7901643	.0283814	27.84	0.000	.7345294	.8457992
dP	.9632995	.166793	5.78	0.000	.6363424	1.290257
_cons	9.316663	.0163262	570.66	0.000	9.28466	9.348667

Marginal Return

Table 11: Marginal Return

Education Level	Cumulative Return	(a_i-a_{i-1})	Years of Schooling (S_K)	Marginal Return (Round Off Figure) (R_i)
dECS	14.40%	14.40%	3.00	4.80%
dL	14.00%	-0.40%	3.00	-0.13%
dLB	26.00%	12.00%	7.00	1.71%
dB	22.00%	-4.00%	1.00	-4.00%
dLS	20.00%	-2.00%	2.00	-1.00%
dS	19.00%	-1.00%	2.00	-0.50%
dBac	49.00%	30.00%	3.00	10.00%
dMas	79.00%	30.00%	2.00	15.00%
dP	96.00%	17.00%	4.00	4.25%

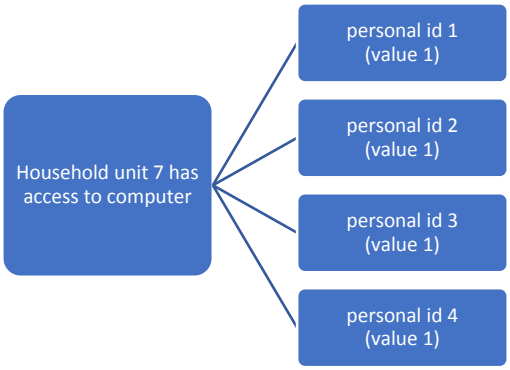
As shown in Table 11, the log income is the dependent variable. The equation has 11 independent variables, including dummy variables for Early Childhood School, Literate levelless (dL), Lower Basic (dLB), Basic (dB), Lower Secondary (dLS), Secondary (dS), Bachelor (dBac), Master (dMas) Professionals (dP), the experience of the individual (experience), and experience square (experience2). As per the statistical characteristics, all variables are statistically significant at a 1 percent significance level, except for Early Childhood School, which signifies that income increases proportionately with the additional level of education.

Null hypothesis: The income of a person does not increase proportionately with level of education.
Alternative hypothesis: Income of a person increases proportionately with level of education.

Model 3

Model 3 was introduced to overcome the constraints of the Models 1 and 2, wherein the equations did not consider the quality of education as a parameter influencing the return to education. In this context, the study has considered computers and the internet as a proxy variable to measure the quality of education.

To capture the quality element, as per the advice of the Central Bureau of Statistics (CBS) team, we considered the household unit (instead of personal ID) to merge the data. For instance, if a household unit (say defined by a number 7) has four personal IDs (say 1, 2, 3, and 4) and has access to computer and internet, the merged data shows value 1 (which is for computer and the internet) for all four personal ids.



After merging the data, an interaction term was developed to capture the impact of the use of computers and the internet in earning. Lastly, the following equation was run to compute the value, as described in the following table.

Table 12: Output for Model

Source	SS	df	MS
Model	293.343772	4	73.3359431
Residual	2192.63703	8122	.269962698
Total	2485.98081	8126	.305929213

Number of obs	8127
F(4, 8122)	271.65
Prob > F	0.0000
R-squared	0.1180
Adj R-squared	0.1176
Root MSE	.51958

logincome	Coef.	Std. Err.	T	P>|t|	[95% Conf.	Interval]
experience	.0065594	.0070831	0.93	0.354	-.0073253	.0204441
experience2	.0017363	.0006545	2.65	0.008	.0004533	.0030193
nsced	.0520372	.00248	20.98	0.000	.0471758	.0568986
nscedxcomxint	.0310079	.0029545	10.48	0.000	.0252067	.0368091

_cons	9.274802	.0165019	562.05	0.000	9.242454	9.307149

As shown in Table 12, the log income is the dependent variable. The equation has four independent variables, including experience of the individual (experience), experience square (experience2), education level (nsced), the interaction term between education level, and use of computer and internet at home (nscedxcomxint). As per the statistical characteristics, all the variables, except for experience, are statistically significant at a 1 percent significance level, as shown by the low p-value.

Null hypothesis: The use of a computer and the internet at home does not affect income.
Alternative hypothesis: The use of a computer and the internet at home affects income.

Appendix 28: Nepal Business Forum Recommended Reforms

Nepal Business Forum

Nepal Business Forum (NBF) was established through the executive order of the Government in May 2010 for building a better business environment in the country by initiating public-private dialogue. The institutional framework of NBF consisted of three committees and a six sectoral Working Groups, supported by the Secretariat. At the apex did the Prime Minister chair the High-Level Business Forum; the Minister of Industry Commerce and Supplies chaired the Steering Committee; the Chief Secretary chaired the Private Sector Development Committee, and six Working Groups were co-chaired jointly by public and private sectors. NBF during its tenure of five years, NBF was successful in creating reforms that positively affected the private sector as a whole. Some of the reforms are listed below:

The decline in tax compliance costs: Until May 2011, the filing of tax returns and submissions posed an additional burden to businesses as it required multiple visits to the tax office month. As per the Income Tax Act 2058 (2002), all deposits from deductible at source and were to be submitted twice, which was administrative and financial burden businesses to invest 34 days year pay taxes. Upon the recommendation of NBF, the government reduced the number of times an organization is required to submit these taxes from 34 to 22. This reduced the administration and logistics cost of tax compliance on businesses and possibly saved the private sector over USD 4.83 million (NPR 362.25 million).

Registration of International Trademark for Pashmina: Addressing the need for better quality control and monitoring of Pashmina, the Export Promotion and Trade Facilitation Working Group of Nepal Business Forum agreed to implement the registration of a collective trademark for Nepali Pashmina in January 2011. Since then, the trademark has been registered in 41 countries and the export of Pashmina products has increased significantly.

Appendix 29: Price Competitiveness Methodology

Methodology

Price competitiveness Index (PCI) for paddy, potato and tomato was calculated by comparing the wholesale market price for locally produced crops and CIF import price .[519] For locally produced crops, the study used secondary data from annual reports published by the Department of Agriculture . The Market Research and Statistics Management Program's (MRSMP) report on "Production Cost & Marketing of Cereal, Cash, Vegetable & Industrial Crops in Nepal 2072/2073 (2015/2016) published wholesale price locally produced crops in 2015/2016. The Center for agricultural Infrastructure Development and Agriculture Mechanization Promotion (CAIDAMP) published the cost of production for 2018/19 The cost of production for fiscal years 2016/2017 and 2017/2018 were not available in the website of MRSMP or its new subsidiary - Center for Agricultural Infrastructure Development and Agriculture Mechanization Promotion (CAIDAMP). Hence, the wholesale price was forecasted taking index as mentioned in the table -- into consideration. The cost of production for 2018/2019 was retrieved through CAIDAMP.[520] The study used the detailed cost structure of the four products to conduct the scenario analyses.[521]

[519] CIF price was taken as the price of imported crop and was adjusted to respective transportation cost to calculate the cost of imported crop in the nearest wholesale market.

[520] As the latest data was available for 2015/16 and 2018/19, time series data of 4 years from 2015/16 to 2018/19 was chosen to compute PIC. Data for 2018/19 was provided by Chief of Center for Agriculture Infrastructure Development and Agricultural Mechanization Promotion (CAIDMP).

[521] Calculation of desired situation after imposing different interventions.

Table 13: Index Used in Forecasting

Variable Cost	Basis for Projections	2016/17	2017/18
Labor	Wage index for agriculture workers	13%	6%
Animal Power	Wholesale Price Index (WPI)	3%	2%
Tractor Service	50% Petroleum price index + 50% of wage index	-7% (petrol index)	6% (petrol index)
Pump Service	50% Petroleum price index + 50% of wage index	-7% (petrol index)	6%(petrol index)
Thresher Service	50% Petroleum price index + 50% of wage index	-7% (petrol index)	6%(petrol index)
Sprayer Service	50% Petroleum price index + 50% of wage index	-7% (petrol index)	6%(petrol index)
Seed	Food in wholesale price index (WPI)	3%	-1%
Animal Manure	WPI	3%	2%
Fertilizer	Petroleum price index	-7%	6%
DAP	Petroleum price index	-7%	6%
Urea	Petroleum price index	-7%	6%
Potash	Petroleum price index	-7%	6%
Zinc	Petroleum price index	-7%	6%

The PCI used the average of the wholesale price over the four-year period to capture only price variations due to fundamental supply and demand drivers. For the price of imported crops, the study estimated the cost, insurance and freight (CIF) prices from the annual foreign trade statistics published by the Department of Customs, for 2015/16 to 2018/19. The CIF import prices were derived by dividing the value of imports by the quantity of imports.[522] The study added to the estimated CIF import price a transportation cost to express the import and domestic prices at the same market location. at the same market location. Finally, the PCI compares the two prices by taking a ratio between the domestic wholesale price and CIF import price.

[522] KISAN team as well as Information officer at Department of Customs confirmed that the import value kept in Foreign Trade Statistics is CIF price.

Appendix 30: Calculation of Transportation Cost

CALCULATION OF TRANSPORTATION COST

The published import data quoted the CIF import prices at the Jogbani port of entry, while sources for the domestic wholesale prices quoted those prices in Kathmandu markets. The study added to the CIF import prices a transportation cost to make the price comparison at the same location in the Kathmandu wholesale market. Trade expert estimated that the freight cost from Jogbani to Kathmandu for18 tons of vegetables over the 374-kilometer distance would reach NPR 65,000;or NPR 0.0097 per kilogram-kilometer. Table xx shows the relevant market locations for the various products and their respective transportation cost.

Table 14: Estimated Transportation Cost

Product	Port of Entry	Relevant Market Location	Distance	Transportation Cost NPR per Kilogram
Paddy	Jogbani	Kaski	523	4.9
Potato	Jogbani	Kavre	209	1.8
Tomato	Jogbani	Lamjung	496	4.7
Maize	Jogbani	Bara	243	2

CALCULATION OF DUTY CHARGE, UNLOADING COST AND CLEARNACE CHARGE

Considering the data of South Asian Free Trade Agreement (SAFTA), duty charged has been assumed to be 9% of the CIF price. Likewise, after consulting with expert unloading cost and clearance charge have been assumed to be NPR 0.15/kg and 1.34/kg respectively[523].

[523] CIF price of 15/16, 16/17, 17/18 and 18/19 was computed and divided by number of years (i.e. 4) to calculate final CIF price.

Appendix 31: PCI Scenario Analyses

PADDY

The study considered four interventions and assessed their impact on cost of production, yield, wholesale price, and the PCI, including a) mechanization of farm operations, b) adoption of advanced seed varieties, c) adoption of improved farm practices, and d) provision of post-harvest services. Experts from NARC helped provide the technical parameters that were used to assess the impacts of those interventions.

A. AVERAGE COST OF PRODUCTION PER HECTARE									
Variable Cost	Rs.	Quantity Before Intervention	Quantity After Intervention	Percentage Increase/Decrease	Remarks	Price Before Intervention	Price After Intervention	Percentage Increase/Decrease	Remarks
Labor	Day	115.75	100	-0.14	Decreased by 14%	420	425	0.01	Increased by 1%
Animal Power	Day	5.08	0	-1.00	Decreased by 100%	639.58	673	0.05	Increased by 5%
Tractor Service	Hour	7	15	1.14	Increased by 114%	731.82	1078	0.47	Increased by 47%
Pump Service	Hour	4.75	10	1.11	Increased by 111%	131.25	152.27	0.16	Increased by 16%
Thresher Service	Hour	11.08	15	0.35	Increased by 35%	218.33	230	0.05	Decreased by 5%
Sprayer Service	Hour	9.67	12	0.24	Increased by 24%	21.25	46.27	1.18	Increased by 118%
Seed	Kg.	42.67	42.23	-0.01	Decreased by 1%	59.17	100	0.69	Increased by 69%
Animal Manure	Kg.	1957.08	1950.36	0.00		1.52	1.52	0.00	
Fertilizer	Kg.								

DAP	Kg.	40.45	50	0.24	Increased by 24%	50.27	50.27	0.00	
Urea	Kg.	64	100	0.56	increased by 56%	25	25	0.00	
Potash	Kg.	20	30	0.50	Increased by 50%	32.36	32.36	0.00	
Zinc	Kg.	2.13	20	8.39	Increased by 8.39 times	90.63	90.63	0.00	

Source: Author's own computation based on the data from Ministry of Agriculture.

Other cost of production included a) management cost, b) interest on variable cost (assumed to be constant rare), c)Post-harvest losses of 8 percent, d) marketing cost of 12 percent, and e) other fixed cost. 1

RATIONALE FOR KEEPING PROFIT PERCENTAGE CONSTANT

If the profit is not kept constant the influence of intervention in price cannot be measured because as the profit increases the price will fluctuate accordingly. The rational is, if a farmer earns NPR 100 profit with Price of NPR 20 and total cost of NPR 40, in that case what should be the wholesale price to earn same profit (i.e. NPR 100) if the total cost decreases to 20 due to intervention.

In the case of increment in productivity, if a farmer earns NPR 100 profit with the price of NPR 20 and yield 1000. So, in that case what should be the wholesale price to earn same profit (i.e. NPR 100) if the total yield increase to 2000 due to intervention.
Hence,
Equation 1
As per the cost structure calculation of CIADMP,
net profit = total final revenue - total final cost
= (total value of main product + total value of by product) - (total cost + marketing cost)
= {(total quantity of main product - 8% post-harvest loss) x (price) + total value of by product} - (total cost + marketing cost)
Keeping profit percentage constant at 40% of total cost net by-product
26,821 = {(4359 x P + 18761)} – (85,387 + 561)
Or P = approximately NPR 21.67

Hence, the price of paddy reduced to approximately NPR 21.67

Table 1: Average National Cost of Production and Margin of Rice before Intervention (Per Hectare)

Particular	Unit	Quantity	Rs./Unit	Total
A. AVERAGE COST OF PRODUCTION PER HECTARE				76,502.53
1. Variable Cost	**Rs.**	115.75	420.00	48,615.00
a. Labor	**Day**	5.08	639.58	3,251.22
b. Animal Power	**Day**	7.00	731.82	5,122.73
c. Tractor Service	**Hour**	4.75	131.25	623.44
d. Pumpset Service	**Hour**	11.08	218.33	2,419.86
e. Thresher Service	**Hour**	9.67	21.25	205.42
f. Sprayer Service	**Hour**	42.67	59.17	2,524.44
g. Seed	**Kg.**	1,957.08	1.52	2,968.24
h. Manure	**Kg.**			0.00
i. Fertilizer	**Kg.**	40.45	50.27	2,033.76
DAP	**Kg.**	64.00	25.00	1,600.00
Urea	**Kg.**	20.00	32.36	647.27
Potash	**K,G**	2.13	90.63	192.58
Zinc	**Kg.**			698.18
j. Plant Protection Chemical	**Rs.**			2,625.00
k. Management Cost	**Rs.**			2,975.39
l. Interest on Variable Cost	**Rs.**			606.56
2. Fixed Cost	**Rs.**			384.00
a. Land Tax	**Rs.**			12.22
b. Water Tax	**Rs.**			113.75
c. Depreciation of Farm Equipment	**Rs.**			96.58
d. Repair & Maintenance of Farm Equipment	**Rs.**			
3. Total Cost	**Rs.**			77,109.09
4. Gross Income	**Rs.**			102,712.68
a. Main Product	**Kg.**	3,586.58	25.46	91,323.38
b. By-Product	**Kg.**	3,785.92	3.01	11,389.30
5. Gross Profit at Farm Gate	**Rs.**			25,603.59
6. Cost Per Quintal	**Rs.**			1,832.38
B. MARKETING COST & MARGIN PER HECTARE PRODUCE				
1. Marketing Cost	**Rs.**			430.39

2. Value at Market	**Kg.**	3,299.66	28.12	92,775.35
3. Net Profit	**Rs.**			26,625.17

Source: Author's own computation based on the data from Ministry of Agriculture**.**

Rice: National average after intervention

Table 2: Average Cost of Production and Margin (Per Hectare)

Particular	Unit	Quantity	Rs/Unit	Total
A. AVERAGE COST OF PRODUCTION PER HECTARE				
1. Variable Cost	**Rs.**			**85,251**
a. Labor	Day	100	425	42,500
b. Animal Power	Day	-	673	-
c. Tractor Service	Hour	15	1,078	16,170
d. Pumpset Service	Hour	10	152	1,523
e. Thresher Service	Hour	15	230	3,450
f. Sprayer Service	Hour	12	46	555
g. Seed	Kg.	42	100	4,223
h. Manure	Kg.	1,950	1	2,923
i. Fertilizer	Kg.			
DAP	Kg.	50	50.27273	2,514
Urea	Kg.	100	25	2,500
Potash	Kg.	20	91	1,812
Zinc	Kg.	30	32	971
j. Plant Protection Chemical	Rs.			1,000
k. Management Cost	Rs.			2,286
l. Interest on Variable Cost	Rs.			2,825
2. Fixed Cost	Rs.			**561**
a. Land Tax	Rs.			356
b. Water Tax	Rs.			11
c. Depreciation of Farm Equipment	Rs.			99
d. Repair & Maintenance of Farm Equipment	Rs.			96
3. Total Cost	Rs.			**85,813**
4. Gross Income	Rs.			**160,886**
a. Main Product	Kg.	4,738	30	142,125
b. By-Product	Kg.	4,690	4	18,761
5. Gross Profit at Farm Gate	Rs.			75,498

6. Cost Per Quintal	Rs.			**1415.36**
B. MARKETING COST & MARGIN PER HECTARE PRODUCE				
1. Marketing Cost	Rs.			**568.50**
2. Value at Market	Kg.	4,359	22	94,441.63
3. Net Profit	Rs.			**26,821**

Source: Author's own computation based on the data from Ministry of Agriculture.

TOMATO

As per expert (from Department of Horticulture at NARC), there is no specific variety of tomato imported from India, hence, similar to the case of potatoes, the average price per kg for all variety/breed produced locally were taken for 2015/2016 and 2018/2019 to calculate the wholesale market price for the respective year.[524] The average of obtained wholesale price[525] was then considered as a final wholesale price. This was then divided by average final CIF prices[526] of the aforementioned years to calculate final PCI for tomatoes.

[524] Due to the tedious calculation involved in cost of production of tomatoes cultivated in tunnel, the study only considers tomatoes cultivated in open field (not in tunnel).
[525] Wholesale price of 2015/16, 16/17, 17/18 and 18/19 was computed and divided by number of years (i.e. 4) to compute final wholesale price for tomato.
[526] CIF price of 15/16, 16/17, 17/18 and 18/19 was computed and divided by number of years (i.e. 4) to calculate final CIF price.

SCENARIO ANALYSIS MODELED INTERVENTION FOR TOMATO

After the discussion with the expert from Department of Horticulture at NARC, following changes were made to increase the yield and reduce the labor cost.

Table 3: Average Cost of Production Per Hectare

Variable Cost	Rs.	Quantity Before Intervention	Quantity After Intervention	Percentage Increase/ Decrease	Remarks (Approx.)	Price Before Intervention	Price After Intervention	Percentage Increase/ Decrease	Remarks (Approx.)
Labor	Days	Days	246.4	220	-0.11	Decreased by 11%	391	425	0.09
Animal power	Days	Days	9	0	-1.00	Decreased by 100%	670	673	0.00
Power Tiller service	Hours	Hours	4.4	20	3.55	Increased by 355% (or 3.5 times)	385	550	0.43
Pumpset service	Hours	Hours	10.2	12	0.18	Increased by 18%	240	152.27	-0.37
Sprayer service	Hours	Hours	16.6	20	0.20	Increased by 20%	22	25	0.14
Seed	Kg.	Kg.	0.424	0.15	-0.65	Decreased by 65%	11960	135000	10.29

Manure	Kg.	Kg.	11124	12000	0.08	increased by 8%	1.4	1.4	
Fertilizer									
Urea	Kg.	Kg.	70	87.5	0.25	increased by 25%	24.6	24.6	
D.A.P	Kg.	Kg.	67	100	0.49	increased by 49%	50.8	50.8	
Potash	Kg.	Kg.	34	43.75	0.29	increased by 29%	35.8	35.8	

Source: Author's own computation based on the data from Ministry of Agriculture.

Fixed cost was assumed to be constant. Likewise, the cost structures including management cost, interest on variable, land lease and plant protection have also assumed to be constant. A 10 percent post-harvest loss (of total produce) and 50 percent marketing cost (of total produce) were considered based on the assumption of the report from the Ministry of Agriculture.

Equation 2:
net profit = total final revenue - total final cost
= total value of main product - (total cost + marketing cost)
= (total quantity of main product - 10% post-harvest loss) - (total cost + marketing Cost (50% of main product))
Keeping profit percentage constant at 1.65% of total cost net by-product (if any)
292,105= (28,980 x P) – (176,461+16,100)
Or P = 16.73
Hence, the price of tomato reduced to NPR 16.73/kg.

Tomato: National average before intervention

Table 4: Average Cost of Production and Margin (Per Hectare)

Particulars	Units	Quantity	Rs/Unit	Total
A. AVERAGE COST OF PRODUCTION PER HECTARE				
1. Variable Cost	**Rs.**			**159209.82**
a. Labor	Days	246.4	391.00	96342.40
b. Animal power	Days	9	670.00	6030.00
c. Power Tiller service	Hours	4.4	385.00	1694.00
d. Pumpset Service	Hours	10.2	240.00	2448.00
e. Sprayer Service	Hours	16.6	22.00	365.20
f. Seed	Kg.	0.424	11960.00	5071.04
g. Manure	Kg.	11124	1.40	15573.60
h. Fertilizer				0.00
Urea	Kg.	70	24.60	1722.00
D.A.P	Kg.	67	50.80	3403.60
Potash	Kg.	34	35.80	1217.20
i. Plant Protection Chemicals	Rs.			1775.00
j. Management Cost	Rs.			2100.00
k. Land Lease	Rs.			15300.00
l. Interest on Variable Cost	Rs.			6167.78
2. Fixed Cost	**Rs.**			**443.00**
a. Land Tax	Rs.			245.80
b. Water Tax	Rs.			0.00
c. Repair and Maintenance of Farm Equipment	Rs.			91.60
d. Depreciation of Farm Equipment	Rs.			105.60
3. Total Costs	**Rs.**			**159652.82**
4. Gross Income at Farm Gate	**Rs.**			**466227.90**
a. Main Product	Kg.	23023.6	20.25	466227.90
5. Net Profit at Farm Gate	Rs.			**306575.08**
6. Production Cost Per Quintal	Rs.			**693.43**
B. MARKETING AT NEAREST WHOLESALE MARKET				

a. Marketing Cost	**Rs.**			**11511.80**
b. Value at Market	**Kg.**	20721.24	21.00	**435146.04**
c. Net Profit	**Rs.**			**263981.42**

Source: Author's own computation based on the data from Ministry of Agriculture

Tomato: National Average After Intervention

Table 5: Average Cost of Production and Margin (Per Hectare)

Particulars	Units	Quantity	Rs/Unit	Total
A. AVERAGE COST OF PRODUCTION PER HECTARE				
1. Variable Cost	**Rs.**			**176,018.15**
a. Labor	Days	220	425.00	93,500.00
b. Animal Power	Days	0	673.00	-
c. Power Tiller Service	Hours	20	550.00	11,000.00
d. Pumpset Service	Hours	12	152.27	1,827.24
e. Sprayer Service	Hours	20	25.00	500.00
f. Seed	Kg.	0.15	135,000	20,250.00
g. Manure	Kg.	12000	1.25	15,000.00
h. Fertilizer				-
Urea	Kg.	87.5	51.35	4,493.13
D.A.P	Kg.	100	25.30	2,530.00
Potash	Kg.	43.75	36.00	1,575.00
i. Plant Protection Chemicals	Rs.			1,775.00
j. Management Cost	Rs.			2,100.00
k. Land Lease	Rs.			15,300.00
l. Interest on Variable Cost	Rs.			6,167.78
2. Fixed Cost	**Rs.**			**443.00**
a. Land Tax	Rs.			245.80
b. Water Tax	Rs.			-
c. Repair and Maintenance of Farm Equipment	Rs.			91.60
d. Depreciation of Farm Equipment	Rs.			105.60
3. Total Costs	**Rs.**			**176,461.15**
4. Gross Income at Farm Gate	**Rs.**			**652,050.00**
a. Main Product	Kg.	32200	20.25	652,050.00
5. Net Profit at Farm Gate	Rs.			**475,588.86**
6. Production Cost Per Quintal	Rs.			**548.02**
B. MARKETING AT NEAREST WHOLESALE MARKET				
a. Marketing Cost	**Rs.**			**16,100.00**
b. Value at Market	**Kg.**	28980	16.73	**484,867.01**
c. Net Profit(considering as a constant variable)	**Rs.**			**292,105.24**

Source: Author's own computation based on the data from Ministry of Agriculture.

POTATO

The expert from National Potato Development Program of NARC) confirmed that every variety of potato is imported from India. Unlike paddy, the average price per kg for all variety/breed produced locally were taken for 2015/2016 to 2018/2019 to calculate the wholesale market price of potato for the respective years. This was then divided by the average final CIF prices of the mentioned timeframe (2015/16 to 2018/19) to calculate the final PCI for potatoes.

SCENARIO ANALYSIS – DETAILED MODELED INTERVENTION IMPROVEMENTS FOR POTATO

INTERVENTION FOR POTATO

After the discussion with the expert from National Potato Development Program of NARC, the following changes were made to increase the yield and reduce the labor cost.

AVERAGE COST OF PRODUCTION PER HECTARE									
Variable Cost	Rs.	Quantity Before Intervention	Quantity After Intervention	Percentage Increase/ Decrease	Remarks (Approx.)	Price Before Intervention	Price After Intervention	Percentage Increase/ Decrease	Remarks (Approx.)
Labor	Day	181.625	140	-22.92	Decreased by 23%	401.88	425.00	5.75	Increased by 6%
Animal Power	Day	11.5	0	-100.00	Decreased by 100%	684.38	673.75	-1.55	Decreased by 2%
Tractor Service	Hour	4.7142857	15	218.18	Increased by 218%	492.86	1078.00	118.72	Increased by 119%
Pumpset Service	Hour	2	10	400.00	Increased by 400%(or 4 times)	71.43	152.27	113.18	Increased by 113%
Sprayer Service	Hour	8.875	14	57.75	Increased by 58%	21.00	21.00	0.00	
Seed	Kg.	1717.5	2000	16.45	Increased by 16%	77.50	80.00	3.23	Increased by 3%
Manure	Kg.	7744	12150	56.90	Increased by 57%	1.16	1.16		
Fertilizer	Kg.								
Urea	Kg.	64.375	106.21875	65.00	Increased by 65%	25.00	25.30		
D.A.P	Kg.	70.625	116.53125	65.00	Increased by 65%	51.38	51.35		

Potash	Kg.	29.375	36.71875	25.00	Increased by 25%	36.13	36.00		

Source: Author's own computation based on the data from Ministry of Agriculture.

The fixed cost is assumed to be constant. Similarly, the cost structure, including management cost, interest on variable cost, plant protection cost, and land lease, is also assumed to be constant. Post-harvest loss of 8 percent and marketing cost of 10 percent of total main produce was considered, as per the assumption in the report of Ministry of Agriculture.

Equation 3:
net profit = total final revenue - total final cost
= total value of main product - (total cost + marketing cost)
= (total quantity of main product - 8% post-harvest loss) - (total cost + marketing C (10% of main product))
Keeping profit percentage constant at 90% of total cost net of by-product (if any)
260143 = (22540 x P) – (286984 + 2450)
Or P = 24.38
Hence, the price of potato reduced to NPR 24.38.

Table 3: Average Cost of Production and Margin – Potato (Per Hectare)

Particulars	Units	Quantity	Rs/Unit	Total
A. AVERAGE COST OF PRODUCTION PER HECTARE				
1. Variable Cost	**Rs.**			**256009.93**
a. Labor	Days	181.625	401.88	72990.55
b. Animal Power	Days	11.5	684.38	7870.31
c. Tractor Service	Hours	4.714285714	492.86	2323.47
d. Pumpset Service	Hours	2	71.43	142.86
e. Sprayer Service	Hours	8.875	21.00	186.38
f. Seed	Kg.	1717.5	77.50	133106.25
g. Manure	Kg.	7744	1.16	8954.00
h. Fertilizer				0.00
Urea	Kg.	64.375	25.00	1609.38
D.A.P	Kg.	70.625	51.38	3628.36
Potash	Kg.	29.375	36.13	1061.17
i. Plant Protection Chemicals	Rs.			1497.50
j. Management Cost	Rs.			1875.00
k. Land Lease	Rs.			10875.00
m. Interest on Variable Cost	Rs.			9889.72
2. Fixed Cost	**Rs.**			**422.38**
a. Land Tax	Rs.			206.50
b. Water Tax	Rs.			10.00
c. Repair and Maintenance of Farm Equipment	Rs.			95.63
d. Depreciation of Farm Equipment	Rs.			110.25
3. Total Costs	**Rs.**			**256432.31**
4. Gross Income at Farm Gate	**Rs.**			**481265.47**
a. Main Product	Kg.	22343.125	21.53	481075.41
5. Net Profit at Farm Gate	Rs.			**224833.16**
6. Production Cost Per Quintal	Rs.			**1147.70**
B. MARKETING AT NEAREST WHOLESALE MARKET				
a. Marketing Cost	**Rs.**			**2234.31**
b. Value at Market	**Kg.**	21225.96875	23.14	**491115.85**
c.Net Profit	**Rs.**			**232449.23**

Source: Computations based on the data from the Ministry of Agriculture.

National Average After Intervention

Table 4: Average Cost of Potato Production and Margin (Per Hectare)

Particulars	Units	Quantity	Rs/Unit	Total
A. AVERAGE COST OF PRODUCTION PER HECTARE				
1. Variable Cost	**Rs.**			**286,561.51**
a. Labor	Days	140	425.00	59,500.00
b. Animal Power	Days	0	673.75	-
c. Tractor Service	Hours	15	1078.00	16,170.00
d. Pumpset Service	Hours	10	152.27	1,522.70
e. Sprayer Service	Hours	14	21.00	294.00
f. Seed	Kg.	2000	80.00	160,000.00
g. Manure	Kg.	12150	1.23	14,944.50
h. Fertilizer				-
Urea	Kg.	106.21875	25.30	2,687.33
D.A.P	Kg.	116.53125	51.35	5,983.88
Potash	Kg.	36.71875	36.00	1,321.88
i. Plant Protection Chemicals	Rs.			1,497.50
j. Management Cost	Rs.			1,875.00
k. Land Lease	Rs.			10,875.00
m. Interest on Variable Cost	Rs.			9,889.72
2. Fixed Cost	**Rs.**			**422.38**
a. Land Tax	Rs.			206.50
b. Water Tax	Rs.			10.00
c. Repair and Maintenance of Farm Equipment	Rs.			95.63
d. Depreciation of Farm Equipment	Rs.			110.25
3. Total Costs	**Rs.**			**286,983.88**
4. Gross Income at Farm Gate	**Rs.**			**527,515.63**
a. Main Product	Kg.	24000	21.53	527,515.63
5. Net Profit at Farm Gate	Rs.			**240,531.74**
6. Production Cost Per Quintal	Rs.			**1,171.36**
B. MARKETING AT NEAREST WHOLESALE MARKET				
a. Marketing Cost	**Rs.**			**2,450.00**
b. Value at Market	**Kg.**	22080	24.38	**549,577.52**

c.Net Profit(considering as a constant variable)	**Rs.**			**260,143.44**

Source: Computations based on the data from the Ministry of Agriculture.

MAIZE

After considering the advice of the expert from **National Maize Research Center**, the average price per kg for all variety/breed (of maize) produced locally were taken from 2015/2016 and 2018/2019 to calculate the average wholesale market price of maize. This was then divided by the average final CIF prices[527] of the mentioned years (2015/16 to 2018/19) to calculate final PCI for maize.

SCENARIO ANALYSIS – DETAILED MODELED INTERVENTION IMPROVEMENTS FOR MAIZE

INTERVENTION FOR MAIZE

After the discussion with the expert from National Maize Research Center, the following changes were made to increase the yield and reduce the labor cost.

[527] CIF price of 15/16, 16/17, 17/18 and 18/19 was computed and divided by number of years (i.e. 4) to calculate final CIF price.

Table 5: Average Cost of Maize Production and Margin (Per Hectare)

AVERAGE COST OF PRODUCTION PER HECTARE									
Variable Cost	Rs.	Quantity Before Intervention	Quantity After Intervention	Percentage Increase/ Decrease	Remarks (Approx.)	Price Before Intervention	Price After Intervention	Percentage Increase/ Decrease	Remarks (Approx.)
Labor	Day	107.67	88.88	-0.17	Decreased by 17%	397.22	425	0.07	Increased by 6%
Animal Power	Day	6.67	0	-1.00	Decreased by 100%	686.11	686.11	0.00	
Tractor Service	Hour	5.78	10	0.73	Increased by 73%	752.78	1078	0.43	Increased by 43%
Pumpset Service	Hour	5.88	9	0.53	Increased by 53%	234.38	234.38	0.00	
Sprayer Service	Hour								
Seed	Kg.	24.11	28	0.16	Increased by 16%	65	100	0.54	Increased by 54%
Manure	Kg.	1340	2180.25	0.63	Increased by 63%	1.31	1.31		
Fertilizer	Kg.	31.11	150	3.82	Increased by 382%	50.11	50.11		
Urea	Kg.	58.89	150	1.55	Increased by 155%	25	25		
Potash	Kg.	11.67	15	0.29	increased by 29%	28	28		

Source: Computations based on the data from the Ministry of Agriculture.

The fixed cost was assumed to be constant. Similarly, the cost structure, including the management cost, interest on variable cost, and plant protection cost, are also assumed to be constant. Post-harvest loss of 8 percent and marketing cost of 12 percent of total main produce was considered as per the assumption in the report from the Ministry of Agriculture.

National Average Before Intervention

Table 8: Average Cost of Production and Margin (Per Hectare)

Particular	Unit	Quantity	Price	Value in Rs.
A. AVERAGE COST OF PRODUCTION PER HECTARE				
1. Variable Cost	**Rs.**			**65373.43**
a. Labour	Day	107.67	397.22	42767.59
b. Animal Power	Day	6.67	686.11	4574.07
c. Tractor Service	Hour	5.78	752.78	4349.38
d. Pumpset Service	Hour	5.88	234.38	1376.95
e. Thresher Service	Hour			0.00
f. Sprayer Service	Hour			0.00
g. Seed	Kg.	24.11	65.00	1567.22
h. Manure	Kg.	1340.00	1.31	1749.44
i. Fertilizer	Kg.			0.00
DAP	Kg.	31.11	50.11	1559.01
Urea	Kg.	58.89	25.00	1472.22
Potash	Kg.	11.67	28.00	326.67
J. Plant Protection Chemical	Rs.			485.00
k. Management Cost	Rs.			2611.11
l. Interest on Variable Cost	Rs.			2534.74
2. Fixed Cost	**Rs.**			**534.11**
a. Land Tax	Rs.			330.00
b. Water Tax	Rs.			10.00
c. Depreciation of Farm Equipment	Rs.			92.78
d. Repair & Maintenance of Farm Equipment	Rs.			101.33
3. Total Cost	**Rs.**			**65907.54**
4. Gross Income	**Rs.**			**83517.10**
a. Main Product	Kg.	3660.33	21.63	79185.21
b. By-Product	Kg.	3998.67	1.08	4331.89
5. Gross Profit at Farm Gate	**Rs.**			**17609.56**
6. Cost Per Quintal	**Rs.**			**1682.24**
B. MARKETING COST & MARGIN PER HECTARE PRODUCE				
1. Marketing Cost	**Rs.**			**439.24**
2. Value at Market	**Kg.**	3367.51	23.67	**79697.66**
3. Net Profit	**Rs.**			**17682.77**

Source: Author's own computation based on the data from Ministry of Agriculture.

National Average After Intervention

Table 9: Average Cost of Production and Margin (Per Hectare)

Particular	Unit	Quantity	Price	Value in Rs.
A. AVERAGE COST OF PRODUCTION PER HECTARE				
1. Variable Cost	**Rs.**			**72,244.74**
a. Labour	Day	88.88	425.00	37,774.00
b. Animal Power	Day	0.00	673.75	-
c. Tractor Service	Hour	10.00	1078.00	10,780.00
d. Pumpset Service	Hour	9.00	152.27	1,370.45
e. Drying cost				
f. Sprayer Use	Hour			
g. Seed	Kg.	28.00	100.00	2,800.00
h. Manure	Kg.	2180.25	1.23	2,670.81
i. Fertilizer	Kg.			-
DAP	Kg.	150.00	51.35	7,702.50
Urea	Kg.	150.00	25.30	3,795.00
Potash	Kg.	15.00	36.00	540.00
J. Plant Protection Chemical	Rs.			445.75
k. Management Cost	Rs.			1,800.00
l. Interest on Variable Cost	Rs.			2,566.23
2. Fixed Cost	**Rs.**			**539.52**
a. Land Tax	Rs.			349.75
b. Water Tax	Rs.			1.67
c. Depreciation of Farm Equipment	Rs.			89.75
d. Repair & Maintenance of Farm Equipment	Rs.			98.35
3. Total Cost	**Rs.**			**72,784.25**
4. Gross Income	**Rs.**			**90,545.86**
a. Main Product	Kg.	4094.55	20.97	85,872.95
b. By-Product	Kg.	4504.01	1.04	4,672.91
5. Gross Profit at Farm Gate	**Rs.**			**17,761.60**
6. Cost Per Quintal	**Rs.**			**1,663.46**
B. MARKETING COST & MARGIN PER HECTARE PRODUCE				

1. Marketing Cost	**Rs.**			**491.35**
2. Value at Market	**Kg.**	3766.99	23.46	**88,354.98**
3. Net Profit (considering as a constant variable)	**Rs.**			**19,752.29**

Source: Author's own computation based on the data from Ministry of Agriculture.

Net profit = total final revenue - total final cost
= total value of main product+ total value of by product - (total cost + marketing cost)
= (total quantity of main product - 8% post-harvest loss) - (total cost + marketing cost (12% of main product))
Keeping profit percentage constant at 28% of total cost net by-product
19,752 = (3767x P+4673) – (72784+ 491)
Or P = 23.46
Hence, the price of potato reduced to NPR 23.46

Table 10: PCI Before Intervention

Wholesale Price	Paddy	Tomato	Potato	Maize
Average Price as of 2015/16	27.80	20.81	25.22	20.54
Price 2016/17	30.72	22.95	26.61	21.95
Price of 2017/18	33.89	24.15	28.17	23.10
Average Price of 2018/19	28.12	22.07	23.14	23.66
Average Wholesale Price	30.13	22.50	25.79	22.31

CIF Price	Paddy	Tomato	Potato	Maize
CIF price 2015/16	26.28	11.21	21.53	27.33
CIF price 2016/17	26.07	11.50	21.51	26.80
CIF price 2017/18	27.50	11.40	16.32	24.46
CIF price 2018/19	29.11	6.05	21.10	30.13

PCI Before Intervention	Paddy	Tomato	Potato	Maize
Average CIF price	27.24	10.04	20.12	27.18
transportation cost	4.90	4.70	1.80	2.00
Clearance charge/Kg	1.34	1.34	1.34	1.34
Duty Charge	2.45	0.90	1.81	2.45
Unloading cost/Kg	0.15	0.15	0.15	0.15

Total cost	36.08	17.13	25.22	33.12
PCI	0.84	1.31	1.02	0.67

Source: Author's own computation based on the data from Ministry of Agriculture.

Table 11: PCI After Intervention

PCI AFTER INTERVENTION	Paddy	Tomato	Potato	Maize
Price After Intervention	21.67	16.73	24.38	23.46
Average CIF Price for 2015.16 to 2018/19	36.08	17.13	25.22	33.12
PCI	0.60	0.98	0.97	0.71

Source: Author's own computation based on the data from Ministry of Agriculture.

Appendix 32: Trend Analyses

Trend Analysis According to Quantity of Imports

Figure 1: Import Quantity of Paddy in Kg from Period 2015/2016 to 2018/2019

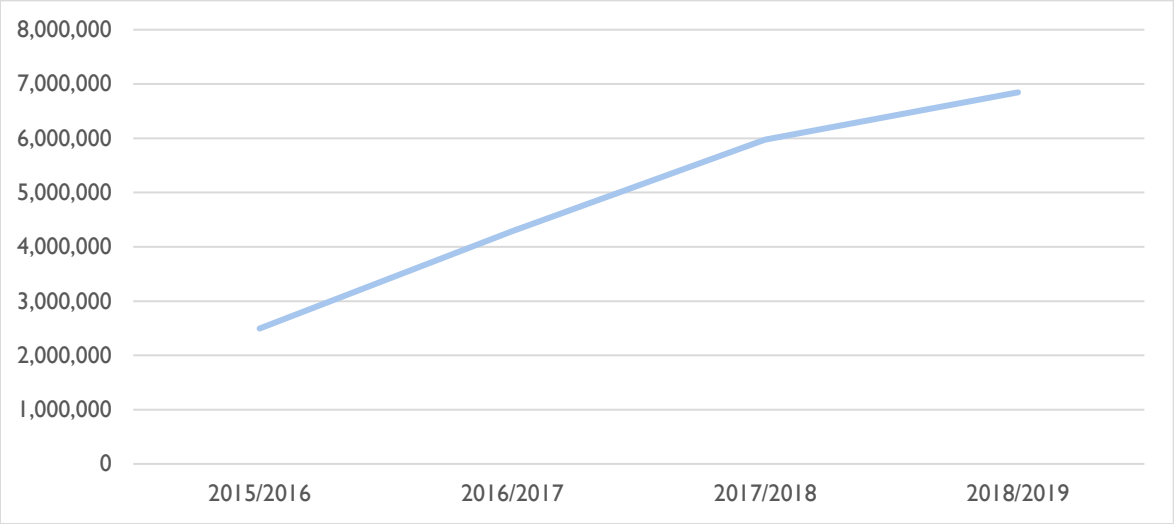


Figure 2: Import Quantity of Maize in Kg from Period 2015/2016 to 2018/2019

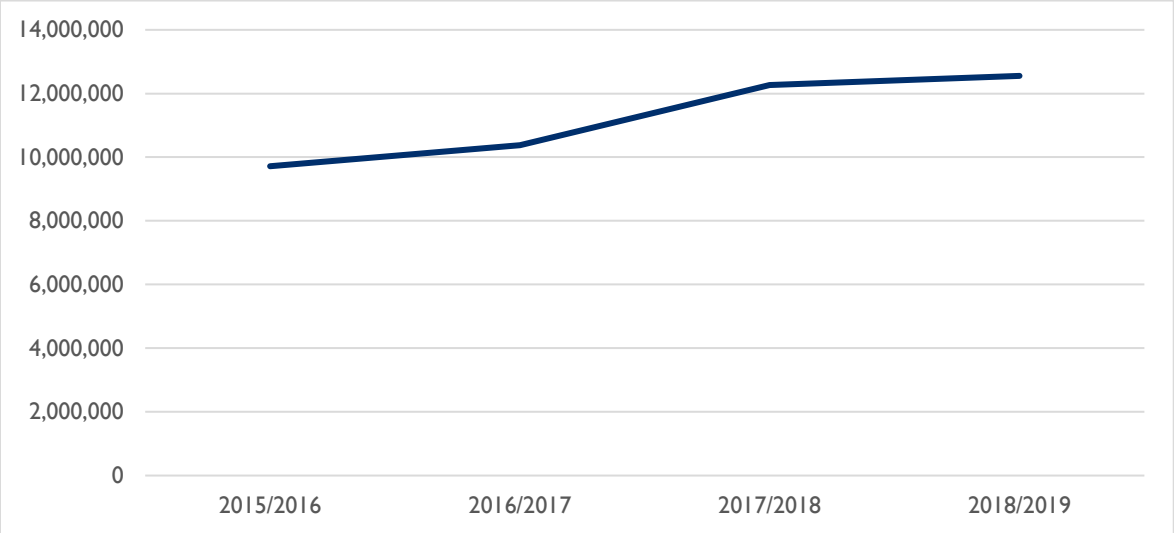


Figure 3: Import Quantity of Potato from Period 2015/2016 to 2018/2019

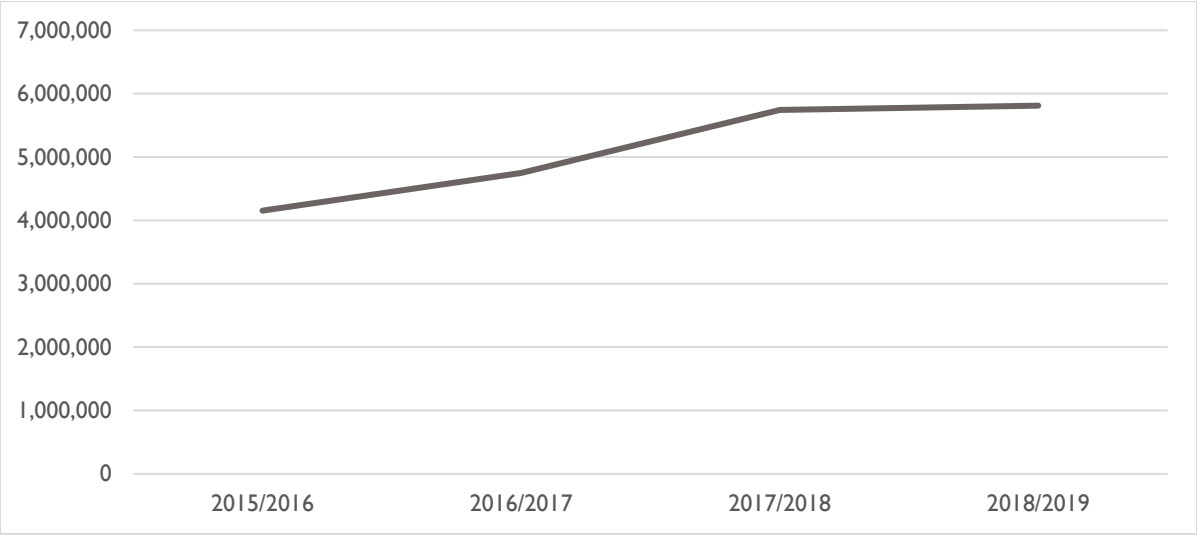


Figure 4: Import Quantity of Tomato from Period 2015/2016 to 2018/2019

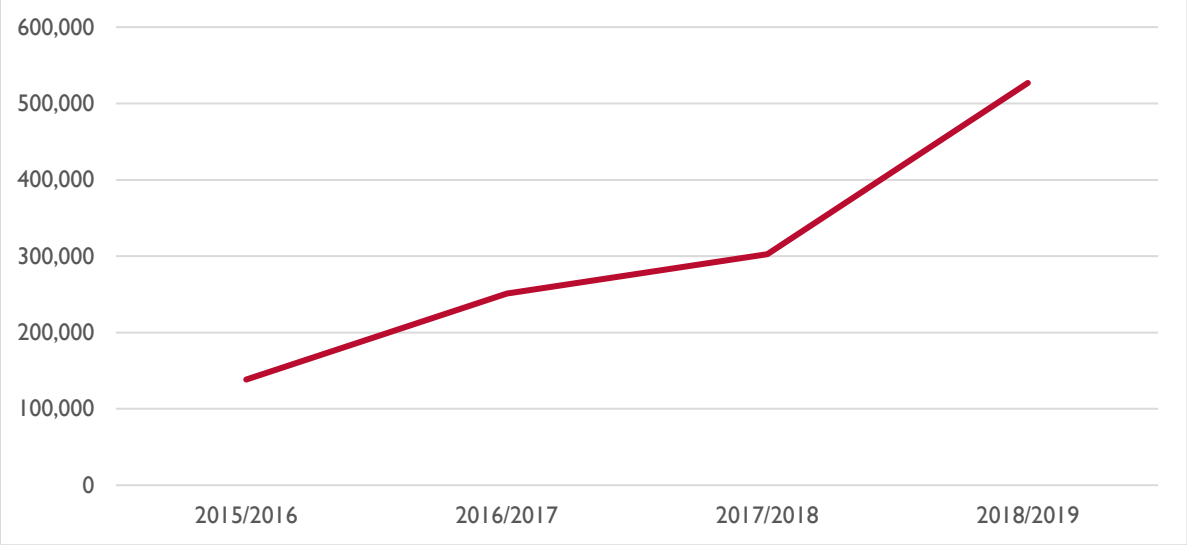
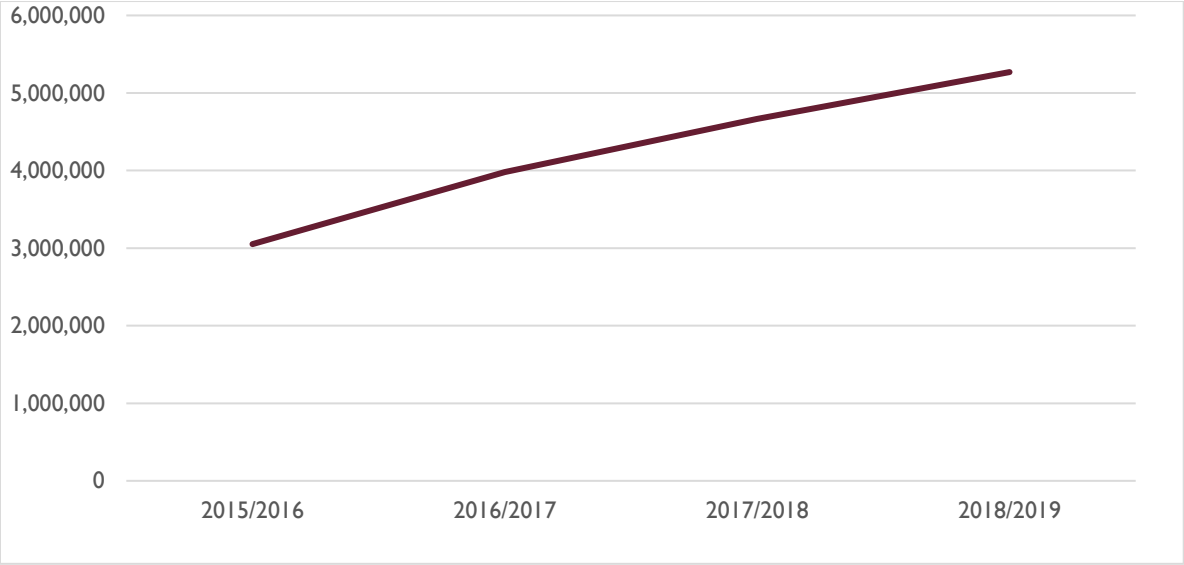


Figure 5: Import Quantity of Onion from Period 2015/2016 to 2018/2019 in Rs'000



Trend Analyses According to Value of Imports

Figure 6: Import Value of Paddy from Period of 2015/2016 to 2018/2019 in Rs'000

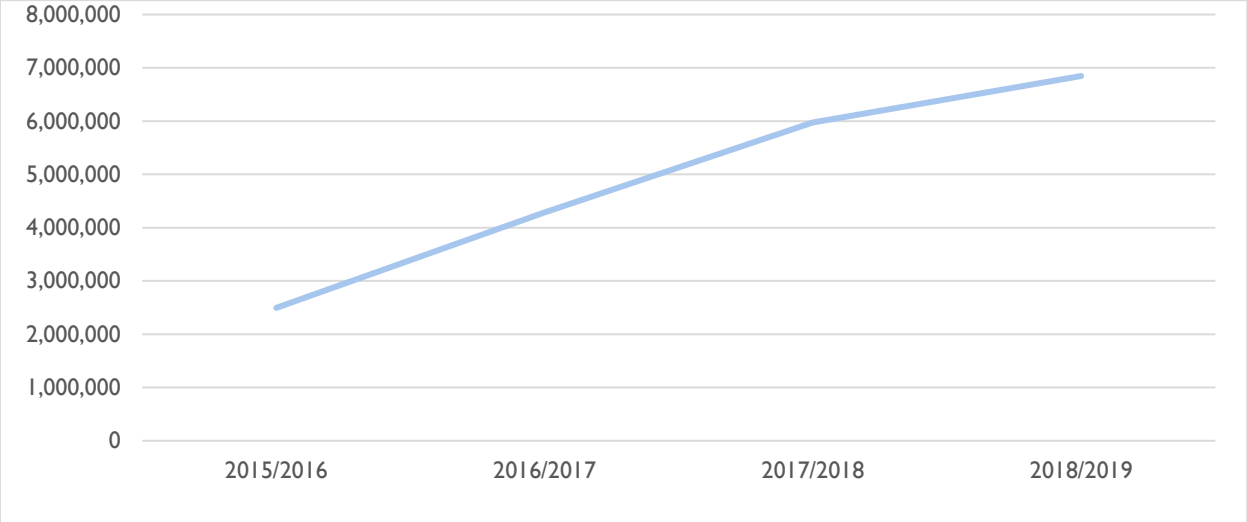


Figure 7: Import Value of Maize from Period 2015/2016 to 2018/2019 in Rs'000

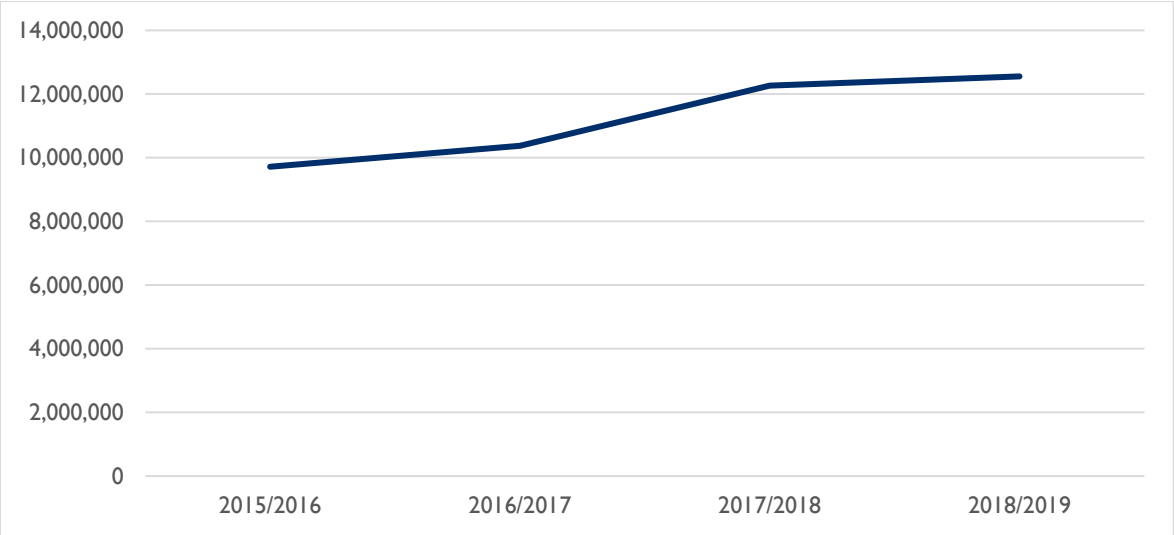


Figure 8: Import Value of Potato from Period 2015/2016 to 2018/2019 in Rs'000

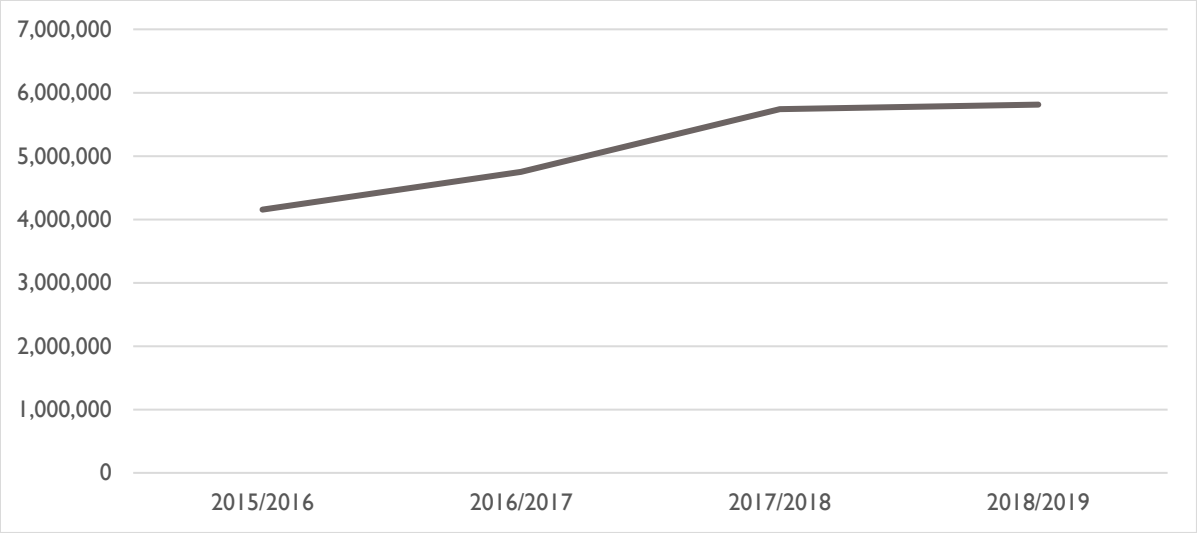


Figure 9: Import Value of Tomato from Period 2015/2016 to 2018/2019 in Rs'000

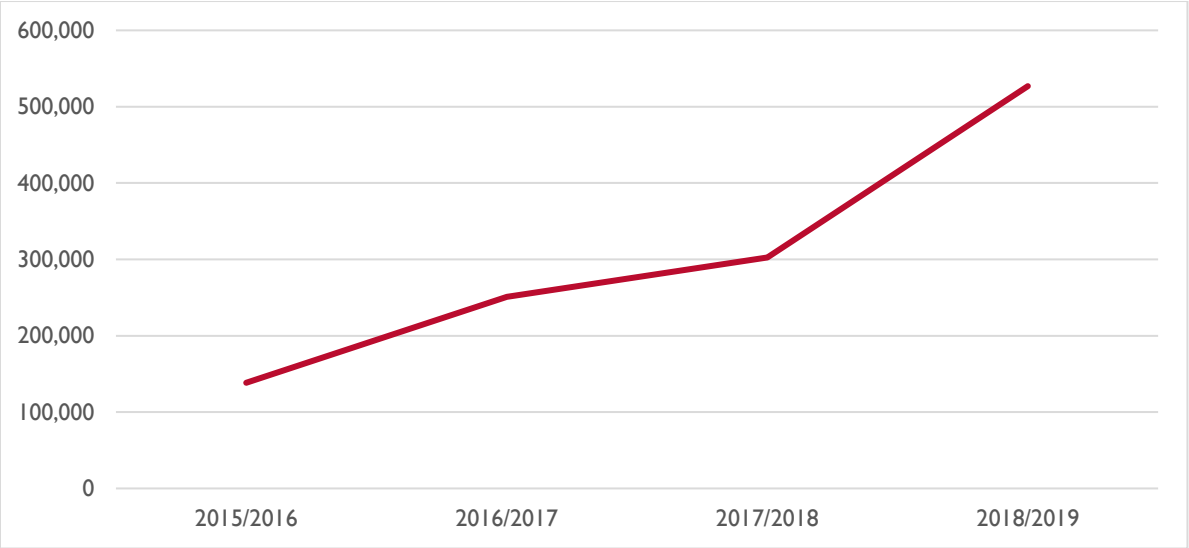
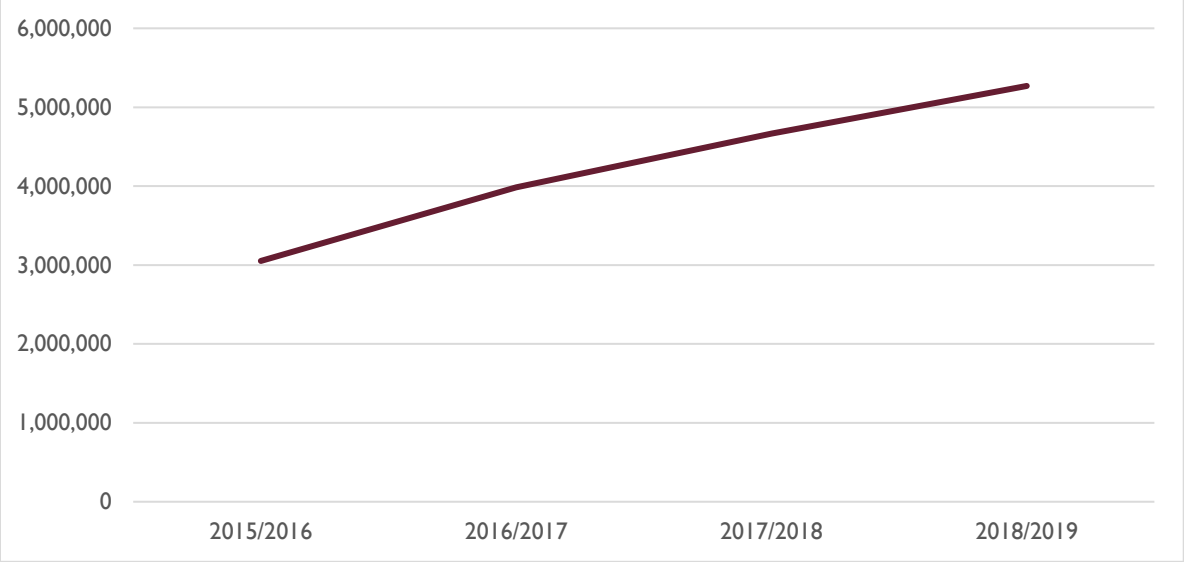


Figure 10: Import value of onion from the period of 2015/2016 to 2018/2019 in Rs'000



Appendix 33: Varieties of Maize, Paddy, Tomato and Onion Cultivated in Nepal

Table 6: Varieties of Maize and Paddy Cultivated in Nepal

District	Maize Variety
Dhading	Khumal Pahelo
Surkhet	Sitala
Dhankuta	Manakamana-3
Kaski	Poshilo Makai 1
Salyan	Manakamana 6
Jhapa	Gaurab
Kailali	Gaurab
Siraha	Rampur 2
Dang	Arun-1
Kapilwastu	Rampur Composite
Sunsari	Gaurab
Chitwan	Hybrid
Sarlahi	Rampur Composite
Rupandehi	Arun-1
Parsa	Rampur Composite
Terathum	Ganesh 1
Okhaldhunga	Manakamana 4
Sindhuli	Manakamana 3
Kavrepalanchok	Khumal Pahelo
Baglung	Manakamana 3
Palpa	Deuti
Gulmi	Rampur Composite
Pyuthan	Manakamana 6
Jumla	Manakamana 6
Jajarkot	Manakamana 6
Lalitpur	Manakamana 4
Taplejung	Sitala

District	Paddy Variety
Panchthar	Local
Udayapur	Local
Dhankuta	Local
Gorkha	Local
Kaski	Lokal/Ekle Jaat-Fine rice
Myagdi	Local
Gulmi	Lokal/Ekle Jaat-Fine rice
Tanahu	Local
Bajhang	Local
Doti	Local
Jhapa	Radha 12
Mahottari	Mithila-Fine rice
Nawalparasi	Rampur Masuli-Fine rice
Dang	Bindeshwori
Kanchanpur	Rampur Masuli-Fine rice
Sunsari	Basmati-Fine rice
Nawalparasi	Kalanamak-Fine rice
Lamjung	Sunaulo Sugandha-Fine rice
Chitwan	Ganga Medium (Seed Production)
Sarlahi	Radha 9 (Seed Production)
Sunsari	Sabitri
Jhapa	Radha 12
Saptari	Janaki
Siraha	Masuli-Fine rice
Mahottari	Mithila-Fine rice
Kavrepalanchok	Khumal-2-Fine rice
Parsa	Sabitri

District	Maize Variety
Rolpa	Manakamana 5
Doti	Mankamana 3
Gorkha	Deuti

District	Paddy Variety
Dhanusa	Janaki
Chitwan	Rampur Masuli-Fine rice
Nawalparasi	Radhakrishna 9
Rupandehi	Rampur Masuli-Fine rice
Kapilwastu	Janaki
Jumla	Chandannath 3
Dang	Bindeshwori
Bardiya	Radhakrishna 9
Kailali	Rampur Masuli-Fine rice
Taplejung	Khumal 2-Fine rice
Sindhupalchock	Khumal 4-Fine rice
Sindhuli	Radha 7
Makwanpur	Palung 2
Bhaktapur	Khumal 11
Myagdi	Khumal 5
Surkhet	Khumal 8-Fine rice
Rukum	Khumal 3
Jajarkot	Khumal 8
Dadeldhura	Rampur Masuli-Fine rice

Table 7 Varieties of Tomato and Potato Cultivated in Nepal

District	Tomato Variety	District	Potato Variety
Lalitpur	Manspricus	Siraha	Khumal Laxmi
Dhadhing	Hybrid	Myagdi	Khumal Laxmi
Lamjung	Manisha	Makwanpur	Khumal Rato
Illam	NCL-1	Kavrepalanchok	Khumal Rato
Dhanusa	Gaurab	Rasuwa	Khumal Seto
		Sindhuli	Khumal Seto
		Kailali	IPY-8

Appendix 34: Discussion Guides

1) Public Sector Discussion Guide

- Are there formal frameworks to engage the private sector in policy planning in your province/local units? If yes, what is the model? If no, why?
- Since the local/provincial government by now have already planned two phases of budgets, has the private sector been accommodated in the discussions? If yes, what is the model, and what were the primary concerns of the private sector?
- Has there been an engagement of the private sector in implementing any projects with the government? If yes, please give examples. If no, why?
- In which areas do you think the private sector can be crucial to enhance public service delivery? Have you taken any initiatives in this direction?
- Recently, the number of women entrepreneurs has increased across Nepal in various sectors. Have you planned/implemented any initiatives to address this chunk of the resource?

2) Private Sector Discussion Guide

- Can you elaborate on the roles and functioning of your organization (number of members, establishment date, and outreach to youth, women, and vulnerable communities)?
- Are you aware of the formal platforms to engage with the government for planning for policies or budgeting for various initiatives? Do you think the platform is effective? How, in your opinion, can the platforms be strengthened?
- What are your key lobbying agendas, and how have you been voicing your concerns?
- What are your significant achievements in lobbying, if any?
- How can the private sector contribute to the agendas put forth by itself?
- How can the private sector help enhance business-related public service delivery?
- How can the government enable your business to expand and thrive? What are the bottlenecks that you face in expanding your business? What are your expectations from the government?