Agricultural Value Chain Analysis

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ABBREVIATIONS

ADB	Asian Development Bank
ADB/N	Agriculture Development Bank of Nepal
AEC	Agro-Enterprise Centre
AEPC	Alternative Energy Promotion Centre
ANSAB	Asia Network for Sustainable Agriculture and Bio-resources
APP	Agriculture Perspective Plan
CA	Constituent Assembly
CAS	Country Assistance Strategy
CADP	Commercial Agriculture Development Project
CBO	Community Based Organisation
CBS	Central Bureau of Statistics
CCF	Climate Change Fund
CD	Customs Department
CEAPRED	Centre for Environmental and Agricultural Policy, Extension and Development
CFUG	Community Forestry User Group
CSIDB	Cottage and Small Industries Development Board
DADO	District Agricultural Development Office
DCCI	District Chambers of Commerce and Industry
DDC	District Development Council
DDCorp	Dairy Development Corporation
DFO	District Forest Office
DFTQC	Department of Food Technology and Quality Control
DFID	Department for International Development (UK)
DLS	Department of Livestock Services

DLSO	District Livestock Services Office
DMF	Design and Monitoring Framework
DOA	Department of Agriculture
DOF	Department of Forestry (under MFSC)
DOI	Department of Irrigation
DoLIDAR	Department of Local Infrastructure Development and Agriculture Roads
DPR	Department of Plant Resources (under MFSC)
ECP	Environmental Code of Practice
EIA	Environmental Impact Assessment
ESMF	Environment and Social Management Framework
EU	European Union
FAO	Food and Agriculture Organization
FHAN	Federation of Handicrafts Associations of Nepal
FNCCI	Federation of Nepal Chambers of Commerce and Industry
FNCSI	Federation of Nepal Cottage and Small Industries
FO	Farmer Organization
FTA	Free Trade Area
GAP	Good Agricultural Practice
GDP	Gross Domestic Product
GLP	Good Laboratory Practice
GMO	Genetically Modified Organism
GMP	Good Manufacturing Practice
GoN	Government of Nepal
GTZ	German Technical Cooperation
GVP	Good Veterinary Practice
HACCP	Hazard Analysis and Critical Control Point
HIMALI	High Mountain Agribusiness and Livelihood Improvement
HNCC	Herbs and NTFP Coordination Committee
HR	Human Resources
HS	Harmonized Commodity Descriptions and Coding System
HVA	High Value Agriculture
HVAP	High Value Agriculture Project in Hill and Mountain Areas
ICIMOD	International Centre for Integrated Mountain Development
IEE	Initial Environmental Evaluation
IFAD	International Fund for Agricultural Development
INGO	International Non-Governmental Organisation
INPM	Integrated Nutrient and Pest Management
IP	Intellectual Property
IPDP	Indigenous People Development Plan
ITC	International Trade Centre UNCTAD/WTO
IWS	International Wool Secretariat
JAPEC	Jumla Agriculture producers and Entrepreneurs Cooperative
LHFUG	Leasehold Forestry User Group
MAPs	Medicinal and Aromatic Plants
MCSI	Micro, Cottage and Small Industries
MDG	Millennium Development Goals
MEBDCC	Micro Enterprise and Business Development Coordination Committee
M&E	Monitoring and Evaluation
MFI	Micro Finance Institution
MFSC	Ministry of Forest and Soil Conservation
MIS	Management Information System
MoF	Ministry of Finance
MOI	Ministry of Industry

MoU	Memorandum of Understanding
MOLD	Ministry of Local Development
MOAC	Ministry of Agriculture and Cooperatives
mt	Metric Tonne
NARC	Nepal Agricultural Research Council
NARDF	National Agricultural Research and Development Fund
NASRI	National Animal Science Research Institute
NBSM	National Bureau of Standards and Metrology
NDDB	National Dairy Development Board
NDSP	Nepal Development Strategy Paper
NEHHPA	Nepal Herbs and NTFP Products Association
NGO	Nongovernmental Organization
NPC	National Planning Commission
NPIA	Nepal Pashmina Industries Association
NPQ	National Plant Quarantine
NTFP	Non-Timber Forest Product
NZFHRC	National Zoonoses and Food Hygiene Research Centre
PACT	Project on Agricultural Commercialisation and Trade
PAM	Project Administration Manual
PAR	Participatory Action Research
PPP	Public Private Partnerships
PRS	Poverty Reduction Strategy
R&D	Research and Development
RAP	Resettlement Action Plan
RMDC	Rural Micro Finance Development Centre
SAFTA	South Asian Free Trade Agreement
SAPPROS	Support Activities for Poor Producers
SNV	SNV Netherlands Development Organisation
SPS	Sanitary and Phytosanitary System
TA	Technical Assistance
TEPC	Trade and Export Promotion Centre
ILO	International Labour Organisation
UNCTAD	United Nations Conference on Trade and Development
USAID	United States Agency for International Development
VCDG	Value Chain Development Grant
VCDP	Value Chain Development Plan
VDC	Village Development Committee
WB	World Bank
WTO	World Trade Organization
WUPAP	Western Upland Poverty Alleviation Project

I. INTRODUCTION

1. An analysis of value chains was made for six niche products in three pilot districts – Jumla, Mustang and Solukhumbu of Nepal. The product chains are apple, medicinal and aromatic plants (MAPs), potato and vegetable seeds, off-season vegetables, wool and cheese.

2. An analytical framework for understanding constraints to the increased competitiveness of industries and value chains has been developed, using a classical value chain methodology (innovation, vertical and horizontal linkages, end markets, enabling environment, potential for value addition at all stages of the chain). Opportunities for each of the niche products are identified.

3. Agribusiness and value chains are crucial levers of rural development and income improvement in Nepal, more especially the high altitude regions of the country. The primary actor in this scenario is the private sector and these entities (including stakeholders involved in the whole chain from production through to marketing), will be the primary beneficiaries of the project.

A. Approach and Methodology

4. The assignment involved an approach which used a range of data and information collection methods including initially the detailed review of secondary information sources, the collection where possible of primary data at field level, and a comprehensive series of meetings and focus group discussions with concerned stakeholders from government, donor community, civil society and private sector, including importantly farmers/producers, community groups and cooperatives. The onus on the approach was to ensure that at all levels (horizontal and vertical) of the value chains that full participation of the stakeholders was central to defining the status, constraints and options for niche product development. In all a total of over 300 stakeholders were involved from project districts, regional commercial centers and Kathmandu.

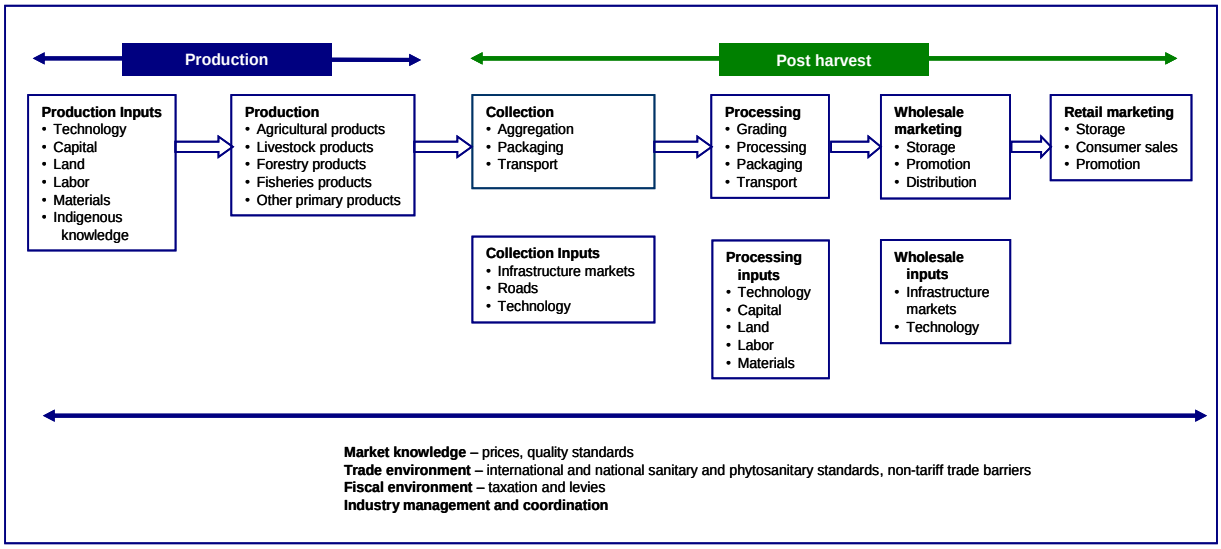
5. In addition to this it was considered essential that for each value chain identified that a small workshop was convened with all the major stakeholders, public and private to discuss the characteristics of the niche products, identify opportunities and constraints and try to identify potential options. A series of five one day stakeholder value chain workshops were undertaken on: (i) apple and off-season vegetables; (ii) seeds (potato & vegetables), (iii) MAP's (medicinal, aromatic and other NTFP's), (iv) dairy (yak cheese), and (v) wool (goat & sheep).

B. Value Chain Approach

6. Agricultural commercialization is based on delivery to the consumer of quality products at competitive prices. It involves the production of niche products for sale rather than on-farm consumption and the use of sale proceeds to buy family and farm requirements. To maximize benefits (or value added) from the business activity and be sustainable, each participant in the delivery chain from producer to consumer must operate efficiently, profitably and in collaboration with other participants in the chain. To be efficient each link in the chain should be operating with the most appropriate technology, in full knowledge of market requirements, and within a business environment where a fair and transparent tax regime applies, trade impediments are minimized and acceptable quality controls are in place. This is the concept of the value chain. A generic value chain system for agricultural products is illustrated in Figure 1.

7. Value chain activities are not isolated from one another. Rather one value chain activity often affects the cost or performance of other ones. In fact each step in the agricultural value chain can be defined as a value chain in itself, and the whole sequence of separate value chains linked into a value chain system as illustrated in Figure 1. Strong linkages and effective communication related to market information (prices and standards, supply and demand information) between stakeholders along the system is necessary for the value chain to function efficiently. In addition, a consistent and fair trade and fiscal environment provides an important framework for an efficient value chain system. Of overall importance is the need for an institutional arrangement that will continue to provide in an ongoing manner active management and coordination for the whole value chain system. Isolated or unconnected inputs are unlikely to achieve a sustainable improvement in the performance of the value chain – a systemic view and complementary program of inputs must be adopted.

Figure 1: Generic Agricultural Value Chain System



8. The primary mechanisms for enhancing value chain performance are by: (i) reducing costs at any point along the value chain, (ii) differentiating products by making them uniquely attractive to the consumer, (iii) introducing appropriate technology at any point in the value chain system, and (iv) improving the performance and collaboration between stakeholder organizations involved in the value chain.

9. The sector analysis indicates that there are few, if any, fully functioning value chain systems in the agricultural sector in Nepal. A number of value chains do operate effectively such as in tea, fruit and vegetable marketing in eastern Nepal and the fresh milk supply managed by DDC, but all suffer from constraints that reduce potential efficiency and value added. Most existing value chain systems suffer from weak linkages between component value chains, especially in relation to market information and lack of overall coordination. They face market impediments in the form of Sanitary and Phytosanitary (SPS) and non-tariff trade barriers, and an unpredictable fiscal regime. The overall business environment has been severely disrupted by an unstable peace and order situation, which has also hampered the ability of the government to deliver its development programs and necessary infrastructure investments and the confidence of the private sector to invest in processing and marketing facilities.

10. The challenge for agriculture commercialization in Nepal is therefore to create mechanisms for working with industry stakeholders to plan and manage the commercialization processes by focusing on individual value chain systems and their linkages. The objective of such a project, and in this case the HIMALI project, would be to

maximize aggregate value added by improving productivity and/or reducing costs and increasing scale of production in selected value chain systems.

11. Such a project would work with interested stakeholders to identify, plan and manage implementation of an integrated support program for selected value chain systems. The project would be demand-driven by the willingness of stakeholders to participate in the planning and implementation process. It is appropriate that the concerned stakeholders themselves, through appropriate institutions, would as far as possible be responsible for management of individual value chain programs; the role of government would be to deliver agreed public sector goods (such as infrastructure, SPS and trade framework, research and training) and assist with delivery of semi-public goods (such as industry specific research or trade missions) where benefiting stakeholders (from producers to consumers) would be expected to contribute according to their ability. The project would be seen as a private sector driven project, supported and enabled by government. The project will adopt and build on the successful models of PPPs found in Nepal such as those applied by Third Livestock Development Project and Crop Diversification Project and some successful bilateral development programs, where appropriate.

II. SITUATION ANALYSIS

A. Agribusiness and Value Chain Situation

12. Agriculture is the main sector of the Nepalese economy, contributing about 38% of the gross domestic product (GDP). However, the sector's performance has been below the 4.15% annual growth anticipated in the Tenth Five-Year Plan (2002–2007), achieving only 2.6% during FY2002–2005 and 3.1% in FY2005. Agriculture GDP per hectare (ha) is $649, but 40% of agricultural households have less than 0.5 ha, and access to land correlates closely with the incidence of poverty. Rural poverty at 35% is more than three times higher than urban poverty at 10% (CBS 2005).

13. A large part of Nepal's rural population (approximately 66%) remains either directly engaged in or dependent on agriculture for sustenance, despite the shift in economic structure from agriculture to services and industry. The agriculture sector has grown slowly and cash crops had a mixed performance over the past decade. However, high-value crops including off-season vegetables, spices, medicinal plants, tea, coffee, honey and mushrooms, performed strongly. With a favourable climate and large variations of microclimates, Nepal has the potential to produce a range of high value crops. Internally, the market for fresh, convenient high value crop products is growing. Nepal is a rapidly urbanizing country; 50% of the population (projected to be 30 million) will live in urban areas by 2035 (as compared to 20% currently) and will consume a large amount of high value crops. The livestock sector, especially dairy and poultry, has also grown strongly as farmers capitalize on the substantial government investment in the sector and expanding high value markets in urban areas.

14. Potential large markets exist in Bangladesh, Bhutan and India where off-season vegetables fetch high prices. The Department of Agriculture (DOA) projects that exports of high value crops to neighbouring urban markets in India will increase from a base of 12,700 mt in 2001, by 105% in 2010, and a further 188% to 65,000 mt by 2020. Clearly, India offers Nepal huge market opportunities. When supply is low and prices are high in India, Nepalese farmers can sell with an advantage. As a result, high value crops are growing faster than cereals and now comprise approximately 11% of the cultivated land area.

15. The extent to which these opportunities can be realized will depend on progress toward resolution of the issues that have resulted in the long period of social and political unrest.

16. Nepal is characterized by a variety of agro-enterprises, ranging from many micro-enterprises composed mainly of family members to few very large enterprises with hundreds of employees. The future development of commercialized agriculture in Nepal depends on the growth of small, medium and large enterprises that goes beyond employing mainly family members. The development of such “corporate” agro-enterprise structure in Nepal is still at its very beginning. The growth of many small and medium enterprises has been strong in recent years and most of the agro-enterprises make a profit and are confident about investing in the sector (Agriculture Sector Performance Review – ASPR survey results). However several constraints remain. The major constraints are related to access to suitable land, access to capital/credit, technology, marketing and infrastructure.

17. The primary land related constraint for agro-enterprises in Nepal has to do with the difficulty that firms have in obtaining a sufficiently large and technically appropriate site with good access to clean water, electricity and road infrastructure from which to undertake their processing operations. The problem is most pronounced for large firms that usually have large land area requirements. Additional problems related to land concern the difficulties associated with obtaining the needed re-classification of land to industrial purposes from government land authorities. The fragmented nature of land allocation in certain areas, coupled with unnecessary over-regulation of land use zoning, may be contributing factors which can substantially add to the cost of finding and accumulating a sufficiently large parcel of land for the processing business.

18. Agro-enterprises lack funds and limited access to credit is one of the major problems affecting their businesses. The lack of credit limits the ability of firms to acquire raw materials, upgrade and expand their facilities, market their products, and thereby grow their businesses into a profitable, effective and efficient engine of economic growth. Interest rates in both formal and informal credit markets are high by most standards.

19. Two factors consistently come forward as problems for agro-businesses in the areas of technology: the lack of spare parts, and the lack of human capital to maintain equipment. A large portion of the machinery used in the agro-industrial sector is over 10 years of age; it may have already outlived its usefulness, and may be in need of replacement.

20. Lack of information is a key problem for agro-processors in Nepal. Firms have identified the lack of information on markets and marketing opportunities, both domestically and internationally, as well as insufficient information on final consumer prices for their processed and reprocessed products. Although enterprises must make their own business decisions based on information available, government and the private sector can together play an important role in facilitating the collection and dissemination of information on marketing opportunities and prices.

21. Major infrastructure related constraints are; firstly, and most importantly, the problem of interruptions in the supply of electricity. Periodic brown and black outs, and damaged machinery and equipment contribute to losses in production and spoilage. While larger enterprises are in a better position to deal with frequent power interruptions by investing in power generation equipment to help mitigate the effects of power shortages, smaller businesses are forced to halt production. Secondly, agro-industries lack access to clean water which is vital for ensuring public health in agro-processing. It is important to maintain hygienic food preparation surfaces, and to avoid contamination of the food product itself.

1. Value Chains in High Altitude Environments

22. Value chains in mountains are different and hence require a differentiated interpretation. Mountain value chains are influenced by a set of mountain specificities to which they own their comparative advantage and at the same time challenges to reap higher

returns. Mountain specificities such as the availability of unique and niche products and services, accessibility, fragility, diversity, and marginality have strong impact on value chain analysis and the selection of value chain development options. The value chain approach is already implemented for mountain areas, however, without contextualization to the mountain environment. A generic value chain framework lacks understanding of the socio-economic and environmental imperatives in mountains which greatly shape the ways in which interventions will function. The disregard of mountain specificities makes value chain interventions less successful and can expose mountain communities to even more vulnerability. Hence, there is a pressing call to adapt the generic value chain approach to the mountain specific context.

23. The majority of the population of the high altitude areas in the Himalayas depends on subsistence agriculture and natural resources for its livelihood. About 90 percent of the farmers in mountainous areas depend on marginal and small land holdings, where they typically cultivate less than one hectare per household. In many cases, they augment their income by using other natural resources that provide additional food and services.

24. The great diversity afforded by high mountain conditions (biodiversity, climates, topography, culture) provides a comparative advantage for these areas to produce a variety of niche products‘ for their own and lowland consumption. However, in the Himalaya region most of collection, processing, and marketing suffer from a multitude of problems, which in most cases prevent mountain people from adequately benefiting from the resources they are endowed with. The markets are often secretive and disorganized and small producers and service providers lack the capacity to actively interact and negotiate with more experienced buyers and traders. Most of the mountain production is based on agriculture or NTFP sector and products are sold in their unprocessed form. The same holds true for service value chains as tourism which full potential for poverty reduction has so far been underutilized. A lack of value chain coordination, weak institutional and policy support, market capacities of mountain producers and service providers cause ‗leakages‘ of local generated income. Local value addition is rare and mountain value chain stakeholders only reap a meagre share of the value of the final product or service. Much of the benefit accrues to people and places far away.

25. The value chain approach offers a mean to address these deficiencies. It has the potential to highlight pathways for inclusive economic growth by identify leverage points along a value chain, be it upstream or downstream1, which, if addressed, yield the highest positive outcome for small producers, traders or processors. However, for mountain areas it requires adaptation. Upstream value chain actors represent small producers, trader or processors which are close to the product/service origin. Downstream value chain actors are larger trader and processors which are closer to the end market.

2. Government Policies and Agribusiness Development

26. During the 1990s the Government initiated (i) reforms to move toward a more market oriented economy, and (ii) devolution of responsibility to local bodies under the Local Self Governance Act 1999. The 1995 Agriculture Perspective Plan (APP) and subsequent plans provide the development framework. Agricultural growth is considered key to poverty reduction and the APP stresses diversification on the basis of geographic location and commercialization of agricultural products. The ninth and tenth five-year plans (1996–2001 and 2002–2007) draw on these strategies. To diversify and commercialize agriculture, the current strategic approach includes (i) mobilizing government and non-government service providers in partnership and on a contractual basis, (ii) promoting cooperative and contractual farming, (iii) devolving local agricultural programs to local bodies, (iv) strengthening agricultural research stations as resource centres, and (v) providing technical backstopping.

a. Key Issues Facing Agricultural Commercialization

27. Landholdings are small and government policies which set ceilings for land ownership are a significant characteristic of Nepalese agriculture. The existence of many small household production units tends to limit the application of technologies such as mechanization and constraints achievement of economies of scale in agriculture. Aggregation of product and a lack of information about the value chain or any influence over it are also issues confronting producers. In recent years, farmers have been allowed to plant orchard or tea and coffee plantations in area exceeding the approved land ceiling; these are all perennial plants and their plantation is considered 'industrial activity'. Smallholders have traditionally focused on production of subsistence crops. High value crops do offer farmers significantly higher returns, but the products are perishable, prices are volatile, and the marketing process is time critical. Lack of an effective marketing chain results in losses, victimization by traders may cause farmers to perceive high risks in changing to high value crops. Technology constraints from production to consumption, along with insufficient and poorly shared market information, a lack of product standardization, and inadequate quality assurance systems hinder commercial agriculture development. Insufficient knowledge of technology and market needs, and infrastructure (rural roads and access to highways, collection centres, cool and cold stores, and rural transport), and inefficient water resource management and crop variety selection affect farmers.

28. In addition, most farmers are smallholders and are often isolated or organized in small groups. They sell small quantities in the peak season and have difficulty accessing inputs, credit and technology. Their limited knowledge of technology and market requirements is reflected in low production and low quality. Processors complain of small, disaggregated amounts of product, irregularity of supply, and poor product quality. Both farmers and processors will be able to benefit from value-added agriculture products if the market chain is developed, and technology and infrastructure assistance are provided.

29. There are also significant constraints facing agro-enterprises in Nepal. Bureaucratic inconvenience, rigid labour markets in the formal sector, incomplete legal framework for business, and an unpredictable operating climate inhibit investment and raise the costs of doing business. Weak infrastructure, transport and transactions delays, high power costs, and an unpredictable regulatory framework further burden price competitiveness. Improvement in these constraints would also contribute to much greater export competitiveness.

30. Currently in Nepal, farmers are faced with market uncertainty for their products, and processors and traders are constrained by unreliable quantity and quality. This has slowed the rate of commercialization of agriculture. In addition, membership of the WTO has brought obligations to meet international quality standards and this has significantly impacted on the export of high value crop both to India and to potentially rewarding markets in Europe and USA.

b. Prospects for Agricultural Commercialization

31. High value crops can provide much higher income than cereal crops. High value crops are particularly appropriate for smallholder farmers (0.5 ha or less), because they are labour intensive and offer higher returns per ha. Studies show that households growing at least some high value crops have significantly higher net incomes than those only producing food grains.

32. Although the public sector has played a role in high value crop adoption and commercialization, the contributions of non-government organizations (NGOs) and the private sector have, on balance, been more significant. Vegetables, tea and potatoes are

examples of where largely private investment in storage and processing has resulted in strengthened value chains. Farmer groups investing in localized storage have obtained improved returns by aggregating and holding their products, and selling in the off-season. Farm-to-highway linkages in the form of roads or bridges built and maintained by the community also have substantial economic impact on communities.

33. Collaborative participation between farmers, non-government or private sector and government has proved beneficial in organizing farmers and creating effective delivery systems for technology and awareness of market needs. Experience has shown in a range of horticulture commodities that increasing collaboration among stakeholders and removing constraints along the market chain can contribute substantially to realizing the latent comparative advantage for the production of high value crop in Nepal.

c. Achievement of Inclusive Development and Millennium Development Goals

34. Nepal needs to accelerate efforts to meet Millennium Development Goal (MDG) 1 on hunger, which is so far looks unlikely. This is first and foremost an agricultural issue because rural areas contain a disproportionate number of food-insecure people and part of the solution is to boost food availability. This is imperative following the increase in global food prices in 2008 and their effect on the poor. It is generally assumed that globalization and the creation of an open economy will allow countries to import the food they require. However, this may not necessary hold for Nepal, as it is far from any port that can handle cargo in bulk, making imports of basic staples very expensive. In practical terms, India is the only neighbouring country able to supply Nepal with such staples, but India's decision to ban food grain exports in the face of recent rising domestic prices demonstrates that this could be a very high-risk strategy. From a strategic viewpoint, Nepal needs to rely on its own agriculture for most supplies of staple foodstuffs. Also, most of the country is mountainous or hilly, with limited connectivity to markets. For this section of the population, much of their nutritional needs must be met from their own household production, at least in the short-to-medium term. However, from economic efficiency point of view, attention should be given to cost-effective alternatives in ensuring food supply.

d. Transition from Subsistence to Market-Oriented Rural Economy

35. Poor connectivity continues to be one of the key obstacles to Nepal's transition from largely subsistence agricultural production systems to diversification and commercialization of the sector. This is particularly the case in hilly and mountainous areas, where difficult terrain and low road density impede market access. The challenge here is to improve connectivity through the provision of carefully targeted transport links and market infrastructure, paying due attention to comparative advantage and the necessity of investing in market development.

e. Comparative Advantage

36. Comparative advantage refers to a situation where a country has relatively favorable factor conditions which can serve as the basis for developing competitive advantage in the marketplace. Such factor inputs may include natural resources, human resources, capital resources, physical infrastructures, and information infrastructure. Nepal's source of comparative advantage is limited to its unique natural resource base and possibly some traditional agricultural skills. Nepal has a diverse range of agro-ecological conditions ranging from tropical to sub-tropical and temperate due to altitude gradient from the southern plain of the terai to the hills and mountains. Topography and geology provide a multitude of agro-ecological pockets, many with favorable soil and water conditions that are suited to a wide range of annual and perennial crops, as well as location specific livestock breeds. Seasonal

differences with neighbouring south Asian countries also provide market opportunities for perishable commodities.

37. An important issue confronting agricultural commercialization is in understanding their competitiveness relative to regional suppliers. Nepal is reputed to have a significant comparative advantage in different high value crops including vegetables, spices, tea and pulses. This will also apply to niche products from the high altitude districts of Nepal, more particularly, off-season vegetables, potato and vegetable seeds, and MAPs for example.

f. Rural Finance

38. Although there has been substantial growth in the number of diverse MFIs in Nepal over the past 10 years, the bulk of formal rural finance is still provided through the older formal financial institutions. The Agriculture Development Bank (ADB/N) and other banks are the main source of loans to farmers; about 49% of the farmers obtain loan from bank followed by merchants or middlemen (19%), cooperatives (13%), saving and credit groups (10%), friends and relatives (7%), while the rest 2% get loan from traders and MFIs. The interest rates are lower with the bank, cooperatives and saving and credit (12.3-13.7%) compared to MFIs, relatives and friends and merchants (15.1% - 26.5%). However the cost of obtaining credit and the problem of collateral as a part of lending is high with commercial banks and low with MFIs, and the rate of repayment is higher with MFIs. The recent security situation has seen many commercial sources of credit withdraw from rural areas depriving farmers of the opportunity to borrow. The main issues concerning the provision of rural finance for agricultural commercialization are to ensure the availability of small farm credit and sustainability of MFIs in the potential production areas. Even for poor farmers the cost of credit (interest rate) is less important than the accessibility and timely availability of credit.

g. Post-harvest Institutions

39. Apart from the dairy sector, post-harvest activities in agriculture are managed by the private sector. Effective trading channels are based on trust built up between buyers and sellers through a pattern of business interaction over time. Trading in agricultural commodities, especially perishable commodities with widely fluctuating prices often caused by uncertain amounts of arrivals on a daily basis, is commonly viewed as a more risky business than trade in most other types of goods. The marketing channels vary according to the commodity traded such as perishable products (fresh vegetables), storable products (MAPs and wool), and according to the market facilities available in the area (e.g. road head, collection center, haat, mandi). The major participants in the marketing of vegetables for example are farmers, trader-assemblers (usually resident indigenous traders), trader-shippers (often migrant traders from outside areas), itinerant traders, transporters, retailers, bus operators, and agents or wholesalers from distant markets (often from India). For tea and coffee producers the processors are the key players in the market chain.

40. There are numerous business associations in Nepal representing the interests of their members with government and to tackle issues of industry problems in common. In recent years, some cooperative societies such as milk producers' cooperative societies, vegetable marketing societies, small farmers' cooperative limited, vegetable production groups, etc., are emerging as private organizations with community or producers shareholders. Similarly, there are industry oriented associations such as: Nepal Carpet Exporters Association (NCEA), Nepal Herbs and Herbal Products Association (NEHHPA), Nepal Pashmina Industries Association (NPIA), Central Carpet Industries Association (CCIA), Nepal Dairy Association (NDA), Seed Entrepreneurs Association of Nepal (SEAN), Nepal Cold Storage Association (NCSA) and some others emerging as private organizations facilitating agricultural commercialization and commodity diversification in the country. Agro-processing

ranges from cottage industry processing of dairy products, milling of grain, and small-scale slaughter of animals, to larger enterprises such as fruit and food processing, sugar mills etc.

h. Trade Issues

41. **International Trade:** International trade in agricultural commodities is a modest but important part of total trade. Agricultural exports account for roughly 15% of Nepal's total exports to India. Indeed, agricultural export to other overseas countries is very nominal (<5% of total exports).

42. Estimates of comparative advantage in production of certain agricultural commodities suggests there is potential to develop a competitive advantage in trade in many of these commodities provided post-harvest processes are efficient and trade impediments are minimized. Nepal has access to large markets. Borders with India and Bangladesh provide an important commercial export opportunity in regional markets, while the demand for specialty products such as coffees and teas and honey, as well as the rapidly growing market for alternative health products and essential oils, provides for a potentially large international market in Europe, America and Japan.

43. A recent ADB report[1] concluded that Nepal's ability to be competitive is constrained by inadequate mechanisms and incentives for firms throughout the economy to acquire new technology, poor infrastructure, and an unfriendly investment climate are also constraining integration with the global economy. Bureaucratic burdens, rigid labor markets in the formal sector, inadequate bankruptcy and foreclosure provisions, and an unpredictable operating climate inhibit investment and raise the costs of doing business. Weak infrastructure, transport and transactions delays, high power costs, and an unpredictable regulatory framework further burden price competitiveness. The report concluded that removing these constraints would enable the country to raise its export competitiveness markedly.

44. High costs associated with formal border trade with India, for example, have led to a large share of that trade running through informal channels. A survey carried out by ADB in 2000 revealed that institutional factors such as prompt payment, no paperwork or procedural delays, and lower transport costs were instrumental in driving traders to use informal channels. Reducing costs and removing the hurdles at the border will be important in expanding trade with India.

45. **WTO Obligations:** As a member of WTO, Nepal is both subject to, and entitled to, take advantage of the conditions of membership. The WTO agreements cover a wide range of areas and activities including agriculture. The major agreements that have direct relations with agriculture are the Agreement on Agriculture, Agreement on Application of Sanitary and Phytosanitary Measures, Technical Barriers to Trade and Trade Related Aspects of Intellectual Property Rights.

46. Also as a member of WTO, Nepal is obliged to comply from 1 January 2007 with the Sanitary and Phytosanitary (SPS) Agreement which governs the quality of international trade in food, animals and plant materials and allows importing countries to set and require compliance with quality standards for these materials. A review of the SPS situation in Nepal identified some important deficiencies in the ability of Nepalese authorities to identify, verify and regulate quality in all three aspects of SPS (human foodstuffs, animal and plant materials). Overall the responsible authorities lack the regulatory framework, infrastructure, equipment, resources, means of enforcement, and technical and managerial skills to effectively implement their SPS obligations.

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[1] Asian Development Outlook 2006, ADB

47. There is a widespread lack of awareness of SPS issues among government officials, the private sector (including agricultural producers, food processors, hotel and restaurant operators) and consumers. Institutions responsible for professional and technical training in SPS related fields are constrained in their ability to provide appropriate and practical instruction by lack of facilities and resources.

48. Deficiencies in the SPS system are already having significant impact on the ability of Nepalese exporters to access former and new markets as importing countries require product certification and formal assurances regarding chemical residues and pest and disease status. Nepal has no laboratory certified to provide verification of disease and contamination status, or the capacity to undertake the formal risk assessment required. Similarly Nepal is unable to conduct effective SPS management on imports of foodstuffs, livestock and agriculture commodities. SPS facilities and operations at the border are fragmented and lack coordination. Only the tea industry has a Code of Conduct that is consistent with good agricultural practice.

49. A number of investments are being made in the SPS sector. These include: the construction and equipping of a central laboratory for the Department of Food Technology and Quality Control (DFTQC) (Japan), the development of quarantine facilities at four border checkpoints (India), and the National Avian Influenza and Influenza Pandemic Preparedness and Response Plan (World Bank). Efforts have been made to revise legislation and regulations relating to SPS issues and to formulate codes of practice for food processing and some livestock and agriculture practices. In many cases the revised legislation, regulations and guidelines are pending implementation. However, significant parts of the legislative framework do not comply with requirements of the SPS Agreement. A holistic and integrated approach is required to address the needs of an SPS and quality control framework in Nepal that will include: review of the legislative framework, infrastructure and equipment, increased technical and managerial skills, additional resources, and programs that deal with SPS issues from producer to consumer.

3. High Mountain Agriculture Sector Overview

50. The high altitude regions of Nepal are characterised by a temperate to alpine range (> 2,000 to 4,500 masl) which has a cool temperate climate, with snow fall in winter months and mild summer month (20-24^{o}C) and generally lower rainfall compared to the terai and mid hill areas. In these areas the major staples food crops grown are potato, maize, barley, wheat, and buckwheat are main food crops, cultivated on the preponderance of rainfed bari-lands. Beans (*Phaseolus vulgaris*) are the common pulse crop and are used extensively as dal and vegetable. Apple, walnut, almond, peach pear, plum are the important fruit crops, and as to horticulture cabbage, cauliflower, carrot, radish, potato green pea, tomato, and onion are the important off-season vegetable crops. The communities commonly collect MAPs of which sugandhawal, jatamansi (*Nardostachys grandiflora*), and panch aunle are some of the important NTFPs. Pine trees are the main forest trees. The farmers also keep sizable flocks of sheep and goat, as well yak and chauri.

a. Pilot District Information

51. For the PPTA purpose, three pilot districts were selected as being the most typical of the high mountain regions of Nepal, namely: Jumla (Mid Western Development Region), Mustang (Western Development Region) and Solukhumbu (Eastern Development Region). Selection criteria for these districts included the high incidence of poverty and the fact that road access to the district had been or was in the process of being completed.

52. The projected changes in the demography of the three districts is presented in Table 1 where it is forecast that the population of Solukhumbu, Mustang and Jumla will increase by

1.02%, 0.47% and 1.63% per year respectively. Mustang is the least populous of the three districts.

Table 1: Demographic Projections

	Solukhumbu		Mustang		Jumla	
	Census 2001	2009 Projection	Census 2001	2009 Projection	Census 2001	2009 Projection
Total Population	107,686	116,793	14,981	15,554	89,427	101,776
Male	53,173	57,670	8,180	8,493	45,848	52,179
Female	54,513	59,123	6,801	7,061	43,579	49,597
Sex ratio	98	106	120	125	105	119
Total HH	21,667	23,499	3,243	3,367	15,850	18,039
Average HH size	4.97	4.97	4.62	4.62	5.64	5.64
Literacy rate %	45.81	50	51.75	54	32.41	37
Population Density per sq. km	33	36	4	4	35	40

53. **Jumla:** One of the remote districts of Nepal under Mid Western Development Region in Karnali zone lies in latitude 28º5´ to 29º30´ north and longitude 82º51´ to 82º35´ east with an attitude range of 2,102 masl to 6,339 masl. Bordering Dolpa in east, west Kalikot, north Mugu and Jajarkot in the south. The climate is temperate dry and cold. Average the annual rainfall is 195 mm with a maximum temperature of 29ºC and minimum -10ºC.

54. The district has an area of 254 sq km divided into 30 VDCs, is a high mountain district. The district is composed of high Himalayas and high mountains with some flat high altitude plain. According to CBS population census 2001, it had a population of 89,247 constituted into 15,850 households (sparsely populated). The district is ranked 66th in terms of per capita income, 61st in terms of literacy rate and 56th in terms of infrastructure development. The population is growing at a rate of 1.63 percent per year. The district has 14,743 ha of cultivated land (5.8%) operated by 8,183 households, 104,571 ha of forest (41.1%) and 66,225 ha of pasture land (26%). The average landholding size is about 0.55 ha per household divided into 7 parcels on average. The district is connected to Surkhet by a fair weather road (232 km) and to Nepalgunj by air-route.

55. The district is famous for apples. The apples from other districts like Kalikot, Dailekh and Jajarkot are also sold in the name of Jumla apple. Jumla is also a storehouse of over 100 different kinds of high value NTFPs (mainly jatamansi (spike nard) and silajit). In this district, nearly 3/4 of the household and farm work is done by women, many of the men are away working either in other areas of Nepal or abroad. The porters are 95 percent Dalits.

56. There are a total of 77 I/NGO projects operating in Jumla and about half of these are directly related to agriculture. Most important ones are World Vision, JAPEC, RDGP, 4S, JSDC, CRRN/SSP (SIMI Nepal), and KASASA. WUPAP project of MLD/IFAD is also operational in the district. The market centres are Jumla bazaar, Talium, Nagma, Narakot, Hatsinja, Urthu chautara, Dillichaur, Chautha bazaar and Manisangu. Jumla Festival was organized in 2008 with a slogan which read "Organic apple and vegetables, the base for Jumla's development". DADO record shows 309 households having compact plantation of apple trees in around 420 ha area. There are 33 registered fruit and vegetable nurseries in the district. The district is recently declared as "organic district" by the 14th session of the District Development Council. However, the declaration seems to have been done without much preparation, as remarked by some progressive farmers and other stakeholders

57. Although Jumla is a mountain district, it is better placed in terms of access to different parts of the district. The farthest VDC from district headquarter is Pandav gufa which is one

and a half day walk (64 km). There are 43 completed village link roads in the district. There are 8 agro-vet shops in Jumla half of which are located in Chandannath VDC (Jumla Bazaar). Other agro-vets are in Sanigaun, Narakot, Kanaka Sundari and Badki. There are 7 cellar stores (Chandannath, Talium and Katikswami VDCs) and 6 rustic stores (Patmara, Dillichaur, Garjyangkot and Depalgaun VDCs). There are 12 production cooperatives of farmers (Chandannath, Dillichaur, Badki, Garjyangkot, Lamra, Talium, Patmara, and Kalikakhet VDCs).

58. **Mustang:** The district which is in Dhaulagiri zone of Western Development Region is behind the Himalayas and is considered one of the remote districts of High Mountain in Nepal. There is snowfall for almost 4-6 months of a year. The district has 16 VDCs. The district covers 2,000-8,000 masl altitude and lies in 28º36' latitude north and 89º28' longitude east having Maygdi district in South, Tibet in north, Manang in east and Dolpa in the west. Southern part has a temperate type of climate and northern are sub-alpine or alpine type of climate. This district is considered as a rain shadow area with only 150 mm rain/year. Mustang district is now completely linked with a seasonal weather road. Mustang is however linked with road from Tibetan border (Korola to Charang). The district headquarter Jomsom is linked with air service to Pokhara as well as a fair weather road to Beni, which then links to Pokhara.

59. Of the total operated land (1,254 ha) 0.71 percent is covered by the forest, 1.3 percent unused land, and about 7.42 percent others. The agriculture land is estimated to be around 1136 ha, which is about 90.6 percent of the total land. The average landholding size is about 0.47 ha per household divided into 2.4 parcels in average. Chief source of income in Mustang is remittances, and because of high cost of labour a lot of land left uncultivated

60. **Solukhumbu:** This is a remote district of eastern development region having the highest peak of the world Sagarmatha. The district is named after Solu river flowing from district head quarter Salleri and situated at the base of Khumbila himalaya valley. It lies in the latitude of 27º 20'39" to 28º6'24" and longitude 86º0'21" to 87º0'1" with an annual rainfall of 1,661 mm and temperature ranges from 1.8 to 11.5 ºC. The district has the maximum number of airports namely Lukla, Phaplu, Kangel and Syangboche. The road link is from Katari-Okhaldhunga-Salleri which is under construction called Sagarmatha highway and recently some tractors started to take goods up to Salleri.

61. The total operated land is about 20,664 ha of which 3.87 percent is covered by the forest, 0.20 percent by unused land, and about 3.5 percent others. The total operated agriculture land is estimated to be around 19,097 ha, which is about 92.4 percent of the total operated land. The average land holding size is about 1.02 ha per household divided into 3.2 parcels in average. However, the average size of agriculture land is 0.94 ha/holding.

62. The census data indicates that majority of land operated by households are dry or bari land. Table 2 shows the landholding by type of land (wet/dry).

Table 2: Landholdings by Type[2]

District	Number	Area (ha)			Average size (ha)		
		Wet	Dry	total	Wet	Dry	Total
Solukhumbu	20,246	2,696	17,968	20,664	0.13	0.89	1.02
Mustang	2,685	525	728	1,253	0.20	0.27	0.47
Jumla	14,875	967	7,217	8,184	0.07	0.49	0.55

[2] CBS, National Sample Census of Agriculture, 2001/02

63. Land use status of the sample project district has been depicted in Table 3. The land use data indicates that Solukhumbu has the highest cultivated land followed by Jumla. The cultivated land in Mustang is very small. On the other hand pasture and forest land is very high in Mustang followed by Solukhumbu.

Table 3: Land Use in Study Districts[3]

Solukhumbu

	Agriculture		Non-agriculture			Total
	Cultivated	Non-cultivated	Pasture	Forest	Others	
High Himalaya	503	89	31,808	10,837	149,174	192,411
High Mountain	19,602	11,314	17,812	93,673	2,063	144,464
Mid Mountain	1,330	474	229	720	48	2,801
Total						339,676

Mustang

	Agriculture		Non-agriculture			Total
	Cultivated	Non-cultivated	Pasture	Forest	Others	
High Himalaya	4,516	751	146,174	16,023	18,384	185,848
High Mountain	174	26	1,505	2,465	432	4,602
Mid Mountain						
Total						190,450

Jumla

	Agriculture		Non-agriculture			Total
	Cultivated	Non-cultivated	Pasture	Forest	Others	
High Himalaya	12	21	24,966	8,552	51,898	85,449
High Mountain	14,731	9,293	41,259	96,019	7,614	168,916
Mid Mountain						
Total						254,365

64. The Agriculture Census[4] data indicates that more than 90 percent of the land operated by the households is agriculture land. It is highest in Jumla district and lowest in Mustang district. Table 4 shows the land use status of the households in the study districts.

Table 4: Land Use Status in HIMALI Pilot Districts

SN	Land Use\District		Solukhumbu	Mustang	Jumla
1	No. of holdings		20,246	2,685	14,875
2	Area	ha	20,664	1,254	8,183
3	Agriculture Land	ha	19,097	1,136	7,913
		%	92.42	90.59	96.70
4	Woodland and forest	ha	800	9	4
		%	3.87	0.71	0.05
5	Unused/underdeveloped	ha	42	16	77
		%	0.20	1.28	0.94
6	Other/not elsewhere mentioned	ha	725	93	189
		%	3.51	7.42	2.31
7	Total land/Holding	ha	1.02	0.47	0.55

[3] VDC Profile of Nepal, 2008.
[4] CBS, National Sample Census of Agriculture, 2001/02

8	Agriculture land/Holding	ha	0.94	0.42	0.53
9	No. of parcels/Holding		3.2	4.1	7

4. Government and Private Sector Involvement in Agribusiness

65. The GoN, civil society and private sector entities involved in agribusiness, particularly in the three selected pilot districts in the high altitude areas and centrally, are detailed as follows:

66. The **Agro Enterprise Development Division**, Planning Department, MOAC provides support to farmers in remote areas through transport subsidies (e.g., apple transport in Jumla by road and air transport – for air freight 70% is paid by GoN), support to market infrastructure as well value-addition through processing with facilities made available to cooperatives and farmer groups. Have an initiative to reduce transport costs through in-situ processing. Also have limited subsidies for provision of small farm tools, small threshers, corn shellers, sprayers and hand tools. Have also prepared guidelines on how to provide support to farmers/cooperatives in terms of finance.

67. The **Agro-Enterprise Centre** (AEC) under the **Federation of Nepalese Chambers of Commerce and Industry** (FNCCI) represents ten CBOs including the Seed Entrepreneurs' Association of Nepal, and organizations for floriculture, tea & coffee, beekeeping, carpet and wool products, and sugar. The AEC is the agribusiness arm of the FNCCI and its objectives are to: (i) increase export of high-value Nepali processed products; (ii) link investors' commodity associations and producer groups with markets; (iii) provide support services and information; and (iv) provide a base for industrial trade and agricultural policies. The District Chambers of Commerce and Industry (DCCI) perform a business facilitation role at local government level although their resources and capacity are often limited.

68. The FNCCI/AEC regularly collect price information on various commodities for across the country, promotes trade exhibitions and fairs (e.g., agro-expo), and was originally funded by USAID. The Centre helps with advocacy, for example on customs duties, and also provides links for certification, regulations and harmonisation. Works with DFTQC and is part of Technical Committee on Food Standards. The AEC still needs much more support in order to be able to provide good service to private sector, presently under resourced. It is responsible for running One Village One Product (OVOP) a PPP based program working with Agro Enterprise Development Division in MOAC, NARC and DFTQC.

69. The **District Chambers of Commerce and Industry** (DCCI) in the three districts all vary in their capacity and capability to support local commercial activities, more particularly agribusiness. For example the DCCI in Jomsom, Mustang is not very active and really needs some outside support. In comparison the DCCI in Jumla is much more active in supporting farmers especially in the organic apples production and marketing; and the DCCI in Selleri in Solukhumbu is also quite active, but seems to provide more support to the non-agriculture sectors. Jumla DCCI (total 936 members) stated the important products are in order of priority are apples, MAPs (particularly Jatamansi), and then vegetable seed (especially carrot seed which is a good prospect but marketing is a problem). Off-season vegetables are limited by the length of the road and the fact that Surkhet and Dailekh have own production, therefore only considered for local district production. Dried beans are another potential commodity which Jumla can produce. This DDCI also works with a wide range of organisations including EIG, PAF, WUPAP, SNV, MEDEP, DADO and CLDP. DCCI working with Local Resource Person (LRP) especially trained by SNV for apple processing and grading.

70. Jumla has been declared a food deficit district (3,000-5,000 mt deficit) but the DCCI feel that it is only a rice deficit district after the poorly planned intervention by WFP with its food for work program (note: food for work provides 4 kg rice/day x NRs 80/kg = NRs 320/day; labour costs in Jumla are NRs 200/day unskilled, semi-skilled NRs 300/day and skilled NRs 450/day).

71. There is a very active DCCI in Pokhara (they have an Amarala village which provides support to economic status, literacy, tourism development, vegetable collection centre, etc.). Strategic areas for development in Pokhara are education, tourism, health and agriculture. The DCCI in Nepalganj reports that no apples, vegetables, vegetable seed or woollen products in any significant quantities go from Jumla via Nepalganj to India, only MAPs (most of the MAPs go to India in the raw dried state with also some essential oils extracted from the dried product in processing units in Nepalganj and Banke district).

72. There is a need between the District Development Council (DDC) and DCCI to improve relations, especially in Mustang and Solukhumbu. This is important due to weak public sector institutions, and the fact that legal frameworks are also very weak as local self governance act is poor. Still awaiting the implications to the changes to the new Nepal Federal Structure. There are currently no elected government structures at district level. Note that Local Development Officers (LDO) are all now placed locally as a result of decentralisation.

73. **Federation of Nepal Cottage and Small Industries** (FNCSI) represents national and international governing bodies of Micro, Cottage and Small Industries (MCSIs) and a wide range of entities including:

- Business Consultative Group,
- National Industry Development Council,
- Industrial Promotion Board,
- One Window Committee,
- Export Promotion Board,
- Technical Committee (Department of Industry),
- Revenue Consultative Committee (Ministry of Finance),
- Cottage and Small Industries Development Board,
- National Productivity Council,
- Industrial Enterprise Development Institute,
- Industrial Environment Management Institute (IEM),
- Enterprise Development Centre,
- National Cooperative Development Board,
- Himalayan Trade Point Kathmandu (HTPK),
- Micro Enterprise Development Program (MEDEP),
- Environment Sector Program Support (ESPS),
- Nepal Trade and Competitiveness Study Steering Committee,
- Industrial Development Perspective Plan Vision-2020 under UNIDO,
- Council for Technical Education and Vocational Training (CTEVT),
- Nepal Cottage and Small Industries Development Bank,
- Micro, Cottage and Small Industry Development Fund
- National Business Initiatives (NBI)

74. FNCSI is a non-profit, non-political, non-governmental Business Membership Organization (BMO). It has its networks in 72 districts out of 75 districts in Nepal. These district chapters, as per the constitution of the FNCSI, are either autonomous or branch chapters. Autonomous district chapters are governed by their own constitution formulated in compliance with FNCSI's constitution where the branch chapters are governed directly by FNCSI's constitution. At present 8 district chapters are autonomous and 62 district chapters

are as branch. Besides, the district chapters, FNCSI's membership comprises of 12 national level commodity associations.

75. There is a **Cottage and Small Industry Board** in all three pilot districts. It should be noted that for a business to qualify it should have a maximum capital limit of <NRs 1 mn to minimum of Rs.50,000; otherwise if larger than NRs 1 mn the entity need to be registered as a private company with the Companies Registration Office in Kathmandu.

76. In the developing countries like Nepal gender disparities are one of the major obstacles for enterprise development. As per constitution of FNCSI, it has made a provision to form Women Entrepreneurs Committee (WEC) from central level to district level to streamline the women entrepreneurs in the national economic development of the country. At present the Central Women Entrepreneur Committee has 48 district networks. WECs are working in their optimum capacity and this is the largest network of women entrepreneurs in the country.

77. As regards the **Agriculture Development Bank** (ADB/N) operations seem to vary from branch to branch with some only offering credit while others have credits and savings facilities. Have variable interest rates and the Jomsom branch has little in the way of default on loans as compared to Jumla. In fact in the latter case the management are no longer keen to provide loans to agri-business, especially agro-processing. In Jomsom the biggest loan portfolio is for hotel trade and tourism development. Constraints for ADB are the problem of evaluation of collateral in remote areas and also M&E of existing loans, this is particularly problematic for Mustang as compared to Jumla which has a larger staff complement. Possibilities of working with HIMALI Niche Product Fund as co-partner/facilitator. No insurance schemes for agriculture and farming in Nepal. Furthermore, MFI's not so successful in high altitude compared to terai, and women are better with money than men; problems of mentality for saving among the hill people.

78. There are a large number of donor supported programs and projects which focus on value chain and agribusiness in Nepal, these are listed as follows:

(i) IFAD **High Value Agriculture Project** (HVAP) a new project which involves both the AEC and SNV and DCCI in value chain and inclusive business. In three years the plan is to hand over responsibility from SNV to AEC to ensure longer term sustainability. HVAP will work in 11 districts of west Nepal, and has the concept of first and second stage districts, with the first stage having road connection and second stage Districts - road corridor approach. The idea is to serve villages which are a certain distance for road – down and back in one day (3-4 hours walking distance) for high value products.

(ii) **SNV** working with IFAD on HVAP with 50% core funding from SNV, helped in design and implementation, centralised with MOAC bringing companies to the field. In business try to link through contract first find demand and then work with companies which have to prepare business plans. In organic apple contract did not really work with DCCI Jumla as intermediary – helped with production and organic certification problems. Working with other NGOs in Jumla namely: SEDA, EIG and SSSS (4S – NGO for apple and seed). Their modality is to first work with one company as each company copies the other, not a lot of innovation, each copies the other for a brand ("crowding in" – SNV term).

(iii) IFAD **Western Upland Poverty Alleviation Project** (WUPAP) is involved in value chain support in the districts of western Nepal, including Jumla. The long term (11 year duration) project starting in 2003, and executed by GoN Ministry of Local Development under IFAD funding. The project goal is to strengthen the livelihood system of the target group in a sustainable manner through rights based approach. The project is implemented in 11 uplands

districts of Mid- and Far-Western Regions which have a high incidence of poverty, low human development indicators, and overall deprivation. The project pursues its goal through five different components (labour intensive infrastructure development, leasehold forest and NTFPs production, crop and livestock development and value chains, microfinance and marketing, and institutional development) implemented by government line agencies in collaboration with various development partners and private sector:

(iv) ADB **Commercial Agriculture Development Project** (CADP) focuses on eastern Nepal, and uses a grant funding approach the Commercial Agriculture Alliance (CAA) to fund private sector development. The CAA because of the modalities of the fund tends to focus more on production and not commercialisation/post harvest operations.

(v) The WB **Project on Agricultural Commercialisation and Trade** (PACT) – project provides grants at 70% for small farmers with maximum grant of USD 30,000; larger farmers get 50:50 grant. Competitive grant scheme, thematic grant system with preparation of proposals; 25 Districts (15 terai and 10 hills) taken VC from NGO studies (GTZ, SNV and CADP). Maybe AEC needs support – PACT redefining its role. WB not good experience with DOA for project implementation, want to see outputs.

(vi) EU funded **Food Facility Project** with an emphasis on food security and works with FAO in Nepal. The Food Facility is the EU's response to the food crisis, targeting the transition period from emergency aid to longer-term development. Set up in close collaboration with the UN Secretary-General's High-Level Task Force on the Global Food Security Crisis it focuses on programmes that will have a quick, but lasting impact on food security. From 2009 until 2011, activities under the Food Facility will centre in Nepal on improving farmers' access to quality inputs and services; boosting agricultural production through such measures as micro-credit schemes, improved rural infrastructure and support for farmers' organisations; and providing safety nets to vulnerable groups. These projects are embedded within government policies and strategies for food security and poverty reduction, and are in line with government programmes to address the food price crisis.

(vii) The GoN **Poverty Alleviation Fund** (PAF) where the target beneficiaries of the fund are the marginalised communities, the poor women, Dalit and Janajatis. The PAF predominantly works in the Western and Far Western Regions of Nepal and in the terai, and uses a community based approach to poverty alleviation. It is located in the Karnali region in which Jumla district is located.

(viii) GTZ – **Private Sector Promotion Project** (PSPP) and **Rural Finance Project** (RUFIN). Support chamber commerce through organisational development, introduced "one-stop-starter-shop" for general agribusiness support, youth self-employment program. Work with banks, MFIs on MF for user groups in 7 districts. Chambers take strong lead in coordinating activities with some value chain focus and others with planning and management. Chambers of commerce varies between districts, some with main members which are cooperative compared to other which are private enterprises, many not focused on production but retain and some manufacturing, agri-business is generally not the main focus. GTZ lesson learnt – changed focus away from agribusiness to more public private dialogue; success in value chain and adding value, but difficult bringing value at lower end of the value chain, with less impact at the farmer level; hence now focusing more into district into participatory planning. Value chain support had good results. Difficult to circumvent the obstacles to private sector as it is highly politicised therefore difficult to ignore and look beyond pure business – cannot separate private sector from government; PPP dialogue. SAARC Information Centre (SIC)

funded by GTZ provides trade information (www.saarctrade.info). GTZ, ADB and GoN are working together on MF policy development.

(ix) The UNDP **Micro-Enterprise Development Programme** (MEDEP) is a multi-lateral donor funded poverty reduction initiative supported by the Ministry of Industry (Nepal Government) and the United Nations Development Programme in Nepal since 1998. To support Nepal's poverty reduction efforts, the programme has been identifying the poorest of the poor; working with poor people, especially women, Indigenous Nationalities, Dalit, Muslim, other Madhesi groups and involving them in micro-enterprises.

(x) In Mustang there is the **Annapurna Conservation Area Project** (ACAP) which recently produced two management plans – biodiversity plan and tourism plan, which should be used as a guide for the design and implementation of the HIMALI project. Similarly, the **Sagarmatha National Park** has to be taken into account as regards the project program in Solukhumbu.

5. Value Chain Status in HIMALI Project Area

79. As outlined in the design ToR the PPTA will appraise a limited range of sample mountain products in agriculture, livestock and agroforestry per district. After a participatory review both by the ADB Fact Finding Mission and the PPTA team priority niche products for each of the three target districts have been identified, and these are presented in Table 5. The short list includes five products for Jumla (wool from sheep, apple, off-season vegetables, MAP's, and potato and vegetables seeds), four products for Mustang (wool from goat, off-season vegetables, apple and MAP's), and two for Solukhumbu (cheese from Yak/Nak/Chauri and off-season vegetables).

Table 5: Representative Products from PPTA Pilot Districts

Jumla	Mustang	Solukhumbu
Wool products from sheep, (goat)	Wool products from goat (sheep)	Cheese from Yak/Nak/Chauri cross-breeds
Apple products including fresh, dried, juice, fermented beverages	Apple products: including fresh, dried, juice, fermented beverages	
Off-season vegetables	Off-season vegetables	Off-season vegetables
Medicinal and aromatic plant products from wild harvest and domesticated production	Medicinal and aromatic plant products from domesticated production	
Potato and vegetable seed		

80. A value chain analysis of each of these niche products has been undertaken and these are presented in Appendices 1 to 6. These analyses provide a detailed assessment of these value chains through from production to marketing, covering where applicable the various aspects of post-harvest operations and processing, and outlines trade corridors utilised and a overview of the whole market and the involvement of the various stakeholders including the primary producers/farmers/collectors, government, NGO's, community based organisations and the private sector. To identify issues and constraints at the various nodes along the chain a SWOT analysis has been undertaken, and opportunities and constraints identified. An important part of the value chain analysis has been the costings along the chain to identify the relative cost: benefits within each niche product and identify potential areas for financial leverage. The Appendices all follow a standard format with data and information drawn from the various specialist reports from the other members of the HIMALI PPTA team, and from primary and secondary data.

81. A summarised assessment of the main findings for the various niche product value chains is as follows:

a. Medicinal and Aromatic Plants

82. Non Timber Forest Products (NTFPs) including MAPs provide good potential for income for the rural poor as collection takes place from community forests and government forests and Nepal has large amounts of otherwise rare herbs. It is identified that herbal products have significant contribution to livelihood improvement, income generation and poverty reduction of the local communities in the high altitudes areas. MAPs and other NTFPs roughly contribute 5% to Nepal's GDP.

83. NTFPs and MAPs are strongly promoted by the government, the donor community as well as the private sector. The GoN has formed a coordination committee to develop a policy framework for commercializing MAPs resources of the country with special emphasis on Mid-Western and Far-Western Development Regions. Projects financed by GTZ, SNV and others are working on improving the linkages from producer to exporter by improving the quality and the supplies. GTZ PSP has established a NTFP Alliance with AEC and FNCCI, Herbs and NTFP coordination committee (HNCC) and Nepal Herbs and Herbal Producers Association (NEHHPA) to overcome the lack of business linkages, especially to create opportunities for small-holder farmers. Through the NTFP Alliance, five priority herbs with competitive advantages are identified (Chiraito, Timur, Kurilo/Asparagus, Yarsagomba, and Jatamansi) and promoted from cultivation to domestic and international marketing.

84. Approximately 1,500 plant species are used in the country for medicinal, aromatic and religious purposes and more than 140 species are commercially exported though Indian trade hubs to the EU, Japan and the USA as raw materials for pharmaceutical, fragrance and flavour industries. Most of the regional trading is done through India, while local value addition is limited due to lack of appropriate technologies and support structures. As a broad product group, MAPs can be classified in two distinct groups: high value products from high altitudes and low value products from lower altitudes (below 2,000m).

85. Both Jumla and Mustang are important areas for MAP where transport of the raw material is not a great issue because of the high value/low volume nature of the products. No processing is done in these districts and where the dried raw material is transported to Nepalganj (via Surkhet) and on to India from Jumla, and Pokhara onwards to Kathmandu from Mustang. Over 90% of the MAP is exported as raw unprocessed material to India. Most of the processing is done by private entrepreneurs in Nepalganj and Kathmandu; finished processed products are either sold in Nepal particular to the tourists or shipped abroad to India and worldwide where there is a high demand for quality MAP products from Nepal. Hence overall there is no market problem especially for quality branded products and for the raw unprocessed MAPs. For exported MAP products there will be a need to take into account the WTO trade regulations and certification process.

86. A total of over 30 MAP species have been documented as important for Jumla district and a short list of 10 identified. Therefore value chain analysis was assessed for the identified potential MAPs including Jatamansi (*Nardostachys grandiflora*), Sugandhawal (*Valeriana jatamansi*), and Chiraito (*Swertia chirayita*) based on available information and consultation with stakeholders and key experts. Two species of MAPs Dalechuk (Seabuckthorn, *Hippophae rhamnoides*) and Akharkada have been domesticated and are grown in Mustang. Collection of MAPs in Mustang is not possible as the district falls under the Annapurna Conservation Area Project (ACAP) where wild harvesting is prohibited.

87. It should be noted that the supply of MAP niche products is declining due the problems associated with collection in the high altitude areas where collectors have to travel long distances to find the various species due to problems of over-exploitation and low rainfall affecting growth. Furthermore, domestication of suitable species is still in its infancy. Both

these aspects affect the volume that can be traded and has a negative impact on price, with collectors expecting high uneconomic prices for the various MAP species.

88. The NTFP sector in general is facing various hurdles to develop into a mature sector in Nepal, which include: (i) sustainable harvesting is difficult to promote in public forests and highlands, as control is limited and these areas function more like common properties leading to premature and over-harvesting; (ii) several conservation policies are implemented by the Ministry of Forestry and Soil Conservation (MOFSC), which have forced a large part of the trade to become illegal; (iii) smuggling, corruption and multi taxation cause considerable problems in this sector; and (iv) Nepal has mainly been supplying India trade centers and has not yet managed to establish its own linkages with other importing countries.

89. As regards MAPs there are a number of opportunities and constraints prevailing in raw material production, input supply, marketing, processing, final product distribution, etc., relating to value chain analysis and business development. As the outcome of the project is the development of herbal product business for increased income of the rural communities, status of the niche products with respect to availability, priority, market demand, business practice, and other aspects are examined. High demand of quality product from abroad and high interest of farming communities (farmers, groups, cooperatives) and service providers to promote MAPs agri-business found matching. Suitable altitudes, climate and soil are favourable to grow the selected high value species. Government agencies and I/NGOs are willing to develop MAPs business in the district. A number of documents reveal that government policy is conducive in promoting medicinal plants however implementation part seems weak.

90. The rationale and justification behind the value chain is that medicinal plants are one of the major sources of livelihoods of the Himalayan people. There are not many alternatives for subsistence and income generation for the communities of food deficient districts like Jumla and Mustang. Most crops and fruits do not grow in the high altitude areas (above 2,500 masl) like MAPs, which has direct effect on the livelihood of the rural residents.

91. A total of four important leverage points in the apple value chain have been identified, these being: (i) the MOFSC to work with, ICIMOD, JABAN and other private sector entities to develop appropriate management approaches for MAPs; (ii) MAP collectors and cultivators to be made aware of improved sustainable management techniques for the harvesting, cultivation, domestication, primary processing of economically important MAP; (iii) the GoN with the sector stakeholders to develop appropriate legal framework for the MAPs, including more fair means of taxation and regulation; and (iv) support to a market review of the MAPs sector to better understand the national and international markets.

92. The primary beneficiaries in this MAPs value chain improvement program will be the rural communities and farmers involved in collection and the cultivation of domesticated herbs. The other beneficiaries are the private sector entities involved in the processing, trading and marketing. Government staff and entities will also benefit from improved training, capacity building and improved legal and regulatory frameworks.

93. A total of two example requests have been identified for support from the HIMALI Agribusiness Support Fund (ASF) these being: (a) support in the domestication of selected MAPs through collaboration between community groups and government (Department of Plant Genetic Resources), and private sector in Jumla and Mustang districts; and (b) support to private sector in the undertaking of market review national and international for MAPs sector.

b. Apple

94. Grown in high altitude districts of Nepal (2,000-2,800 masl) with high chilling temperature necessary for optimum production, apple is a potential crop for import substitution and export promotion. It has high cash generating crop compared to other crops within similar climatic areas, and favours the participation of a large number of farmers across a wide range of ethnic groups. This is the reason why apple has been selected as a niche product.

95. Absence of cloud and heavy rain during fruiting to harvesting is required for better quality and marketability. Such agro-climatic conditions are available in some VDCs, such as those found in Kalikot, Mustang and Mugu districts and all parts of Jumla and Dolpa districts. Its import substituting potential is revealed by the fact that during 2007/08 apple fruits worth of NRs 500 mn from China and about NRs 400 mn worth from India were imported. Besides fresh dessert use, apples can be processed into dried apple chips, cider or brandy, juice, and jam/jelly,

96. As a result of the concerted efforts made by organisation like SNV, IFAD, GTZ, USAID and FNCCI/AEC, and also the DDC/DADO, apple production in Jumla in particular can be considered a success. Production methods have been improved and the quality organically certified apples are being marketed successfully in Kathmandu and elsewhere in Nepal. In the 2009 season 70 mt organic apples was sent to Kathmandu at a price of NRs 35 per kg as compared to the previous low price before at NRs 10-15 per kg. There are still production problems with the need for improved orchard management, rehabilitation of old orchards, the replanting of orchards with new improved grafted varieties, and irrigation. In addition to the sale of fresh apples there is a good demand for other products from the fruit, namely dried apple, cider and apple brandy, however more needs to be done to improve the quality of these products. Fresh apples are high volume in nature and care needs to be taken in shipment, packaging is an important issue as is the need for an all weather road link from the areas of production to market. This should not be a problem of Jumla and Mustang with the current progress of road construction in both districts from Surkhet to Jumla and Pokhara to Jomsom. The apples produced in these two districts only really at the present time have a market within Nepal, so the need to satisfy WTO regulatory procedures and certification may not be so much of a problem compared to other niche products such as MAP's and woollen carpets. The issue of the organic production of apples needs to be further addressed.

97. A total of five important leverage points in the apple value chain have been identified, these being: (i) support to MOAC for apples research, (ii) farmer community support in improvement orchard management, including organic farming technologies, (iii) support to farmer groups, cooperatives and traders in proper grading, packing and storage of fresh apples, (iv) support to private entities in the post harvest processing of apples, and (v) undertake a market survey and awareness creation campaign through FNCCI/AEC and other concerned public private entities. It will be important to undertake in parallel a range of interventions along the chain to ensure that production, trading and marketing are all done at the same time and to ensure that there is not an oversupply of unwanted poor quality produce. While the production of fresh apple is important it is considered that proportionally more attention is focused on processing in order to get the best use out of the second grade fruit not suitable for sale is dessert apples. Consumer demand for these processed products needs to be determined at the earliest.

98. The main beneficiaries will be farmers involved in private sector entities (farmer groups, cooperatives and companies), and assemblers, wholesalers and retail traders. The consumer would also benefit from the availability of better quality and healthier organically grown produce (fresh and processed). The other beneficiaries are the private sector entities involved in this sub-sector. Government staff and entities will also benefit from improved training, capacity and facilities, as would agro-vets and other private sector service providers.

99. Two example requests have been identified for support from the HIMALI Agribusiness Support Fund (ASF) these being: (a) the provision of improved apple production technologies to farmer groups and cooperatives to ensure better quality organically grown produce (this would involve both private and public sector service providers); and (b) the provision of support to farmer cooperatives/private enterprise in marketing and packaging centres for organic apples; location Mustang and Jumla. Provide through grant fund the physical infrastructure, equipment, packaging materials, management skills, etc., and involving the private sector entities, DCCI, DADO, and DDC.

c. Off-season Vegetables

100. Nepal and more particularly the high altitude districts, has a comparative advantage in the production of off-season fresh vegetables, but it has yet to effectively translate these resource advantages into competitive and profitable horticultural trade within Nepal, and with India or other countries. The reason is that Nepal lacks the necessary physical infrastructure, and the technical, managerial, and marketing skills necessary for competitive horticultural export development. There are impediments that have seriously contributed to increasing production and marketing costs and raising the levels of uncertainty and risk in the industry and, subsequently, to increasing production and marketing costs of these niche products and consequently reducing competitiveness.

101. There is no problem for market demand for these niche products (which are sold fresh and where no processing is involved) if sold at the right time of year, because of the demand for temperate vegetables. A large number of potential fresh vegetables are already identified for the potential project area, including cauliflower, cabbage, carrot, radish, broad leaf mustard, tomato, garlic, Swiss chard, pea pods and beans. These high altitude areas are also ideally suited for the production of conventional and organically grown vegetables, with the demand of the latter increasing as awareness of consumers in the larger urban areas of Nepal grows.

102. All three pilot districts are ideally suited for off-season vegetable production; however for the sake of this value chain study under HIMALI Jumla has been selected because of its links to Surkhet and Nepalganj, and similarly Mustang with good links to Beni and Pokhara. However, accessibility of the major roads in the project area during the monsoon season is still a major challenge.

103. The current problems associated with the production of off-season vegetables are production oriented where there is need for better crop management, seed of improved varieties (an important issue because of the lack of locally produced vegetable seed of the desired quality and viability, and the unsuitability of varieties from India), and the need for irrigation. Packaging is also a problem as it is essential to ensure that the vegetables reach the market in good condition, similarly cool/cellar stores need to be established to ensure that product deterioration does not take place prior to shipment.

104. A total of five important leverage points in the vegetable value chain have been identified, these being: (i) provision of training and other support to producers of off-season vegetables, (ii) support to agro-vets in sale and technical knowledge of crop inputs including seed and bio-technical products; (iii) support to cooperatives and private entities in the provision of collection centres for safe storage and packaging of off-season vegetables prior to trading and marketing, (iv) undertake a market survey and awareness creation campaign through FNCCI/AEC and other concerned public private entities, and (v) support to upgrading of the existing market information systems for fruit and vegetables for the use by traders and producers. It will be important to undertake in parallel a range of interventions along the chain to ensure that production, trading and marketing are all done at the same time and to ensure that there is not an oversupply of unwanted produce. However, one

priority that needs to be addressed at the earliest is the review of the market and the provision of advice to producers and traders on the production systems for timely cultivation of priority vegetables so as to satisfy the niche product market in the terai and in India.

105. The main beneficiaries will be farmers involved in private sector entities (farmer groups, cooperatives and companies), and assemblers, wholesalers and retail traders. The consumer would also benefit from the availability of better quality and healthier organically grown produce. The other beneficiaries are the private sector entities involved in this sub-sector. Government staff and entities will also benefit from improved training, capacity and facilities, as would agro-vets and other private sector service providers.

106. Two example requests have been identified for support from the HIMALI Agribusiness Support Fund (ASF) these being: (a) the provision of support to farmer cooperatives/private enterprise in marketing and packaging centres for organic vegetables; location Mustang; provide through fund the physical infrastructure, equipment, packaging materials, and management; and (b) the delivery through private service providers of improved vegetable production technologies and better business management to farmer groups; location Jumla.

d. Wool

107. For the basis of this value chain study wool is taken as the collective term for both wool and hair from sheep and goat, used predominantly in the production of carpets and pashmina respectively. For the value chain for wool Mustang and Jumla districts has been selected on the basis of their agro-ecological suitability and the presence in the high altitudes of the desired breeds of sheep, goats and yak. Currently almost all the raw material for the production of high grade pashmina and carpets comes from abroad with 80% from New Zealand and 20% from Tibet. This means there is a complete disconnect in the wool value chain between production and processing. With Nepal joining the WTO there is also now a regulation that if Nepali produced goods are to be sold abroad they must contain at least 8% of locally produced raw materials, the pressure is now focused on trying to increase wool production in Nepal.

108. The current problem is the very poor quality of the locally produced wool, and the fact that there is no organised system of collection and marketing. Furthermore, the wool business is however hampered by many other problems, namely: (i) the declining fertility and degradation of the high altitude pastures due to overgrazing, mismanagement and climate change, with the consequent need to adjust stocking rates to the carrying capacity of the pastures; (ii) the out-migration of the youths who would otherwise have been involved in herding the livestock; (iii) no organised collection of the inner coat of the “Chyangra” goat breed (for pashmina), where the goats also need to be kept above 3,000 masl for this inner coat to grow (often not the case); (iv) the decline in the breeds of goats, and sheep in particular as a result of inbreeding, with the urgent need for a breed improvement programme. The development of the wool value chain is therefore seen as a considerable challenge, where only change will possibly only be brought about brought about in the medium to long term. This will require the concerted effort of all stakeholders including the private sector who will need to satisfy WTO requirements in order to export, the DLSO at District level, ICIMOD for the improved management of the pastures on a sustainable basis, and the FNCCI/AEC to facilitate the whole process.

109. Based on the above a total of six important leverage points have been identified for the wool value chain these are: (i) support to GoN for livestock breeding, (ii) support to communities in rangeland management, (iii) support to agro-vets and farmers in animal health, (iv) support to farmers in post harvest processing of wool and pashmina; (v) support to carpet and pashmina industries in provision of quality raw material from Nepal (WTO ruling), and (vi) improved legal framework and support to textile industry. The primary focus

of support will be the urgent need to improve the production of quality wool at the production end of the value chain; this would involve the initiation of a breeding and livestock improvement program including also improved health and nutrition issues. Secondly it will be important to improve processing at the local level so that either locally produced finished products or quality processed wool and pashmina are available in sufficient quantities for use by the main processors elsewhere in Nepal. Thirdly but also of importance will be the support from government in improving the legal framework for the industry, and also for the project to assist the private sector in undertaking a market study of the international trade in wool and pashmina goods.

110. The primary beneficiaries in this wool value chain improvement program will be the farmers involved in small ruminant rearing, especially those involved in locally produced sheep wool textile production and potential those involved in the supply of improved quality raw material for the carpet and pashmina industries of Nepal. Other beneficiaries are private sector entities involved in these industries. Government staff/entities will also benefit from improved training, capacity and facilities.

111. A total of two example requests have been identified for support from the HIMALI Agribusiness Support Fund (ASF) these being: (a) sheep/ goat management improvement at field level by farmer group/cooperative, and (b) establishment of community processing and storage centres at the VDC level (Jumla).

e. Cheese

112. In Nepal high mountain areas the production of Yak cheese has been an important source of income and livelihoods. The fresh milk source for Yak cheese is from the female Yak referred to as the Nak and Yak crossed with local cows hybrid the female being the Chauri.

113. Production of Yak cheese is centred on the districts of Rasuwa, Ramechhap, Solukhumbu and Dolakha. Currently, there are 36 hard cheese production enterprises. Of the total number of cheese enterprises 27 (6 Dairy Development Corporation and 21 private sector units) are producing Yak cheese and 9 (4 Dairy Development Corporation and 5 private sector units) Kanchan. Presently the production levels of hard cheese are split at around 20:80 between Yak and Kanchan. There are two processed cheese plant operating, one by the Dairy Development Corporation (DDCorp) the other by Nepal Dairy Pvt. Ltd (ND).

114. The effect of reduced milking stock numbers has resulted in a decline in the availability of fresh milk for cheese making. There has been no or limited action by governments agencies to arrest the decline in numbers. This mainly applies to Solukhumbu, Ramechhap and Dolakha districts. Rasuwa district although having reduced stock numbers does maintain a good level of milk production. The effect of being associated with the Langtang National Park has resulted in lower stock densities on pasture resulting in improved milk production from the milking stock. In addition the Tamang (Lama) people of Rasuwa are more settled unlike the Sherpa of the other three districts who are finding better employment opportunities in the tourist industry or outside their districts resulting in a reduction in persons involve in herding and other agriculture activities including milk production and cheese making activities.

115. Total national hard cheese (Yak and Kanchan) production amounted to 548 mt (Yak 108 mt and Kanchan 440 mt) during the 2008/09 period with Yak cheese accounting for 20 percent of production. Over a ten-year period Yak cheese production has fallen with Kanchan increasing at an estimated 15 percent per year. Cheese imports in 2007 accounted for 91 tons of demand with an average import of 60 mt per year over the last 10 years. Imports are of special types of hard, semi-hard, soft and processed cheeses. Imports are

mainly from the EU, Australia, New Zealand and India. There are no formal cheese exports however informal exports are taking place to India.

116. The major constrains to improvement, increased profitability within the value added chain and sustainability in the Solukhumbu district Yak cheese industry are many fold, however such constraints are also being experienced in the Yak cheese producing districts of Dolakha, Ramechhap and Rasuwa and in many cases throughout the Nepal dairy industry. The declining population of Nak and Chauri milking animals, the non-replacement of pure bred Nak stock, the high cost of low milk production Chauri and poor animal health services are of concern. These factors combined with poor pasture management, uncontrolled grazing, the appearance of toxic plants and plants which taint milk are all contributing to decreased output (milk, meat and milking stock for sale) and declining incomes. The milk available for processing is decreasing except for in Rasuwa district is a major constraint for reduced volumes are increasing the unit price of production. The declining income factor together with employment opportunities in tourism and trade is resulting in a diversion from animal breeding and herding especially in Solukhumbu, Dolakha and Ramechhap districts.

117. A total of seven important leverage points in the cheese value chain have been identified, these being: (i) support to herdsmen in Yak herd management, (ii) support to rural private processing enterprise in improved cheese making, (iii) support to the supply chain in better packaging, transit arrangement and storage, (iv) marketing studies and awareness campaigns through FNCCI/AEC & private sector entities, (v) support to MOAC, DLS, DDCorp, and NDB to change pricing structure of milk products (a politically sensitive issue), (vi) support to DFTQC for better cheese hygiene and regulation, and (vii) capacity building to all stakeholders in the value chain. The primary focus of support will be the urgent need to improve the production and quality of the Yak milk at the production end of the value chain; this would involve the initiation of a breeding and livestock improvement program including also improved health and nutrition issues. Secondly and just as important, it will be important to improve processing at the local level so that the cheese is of improved quality that meets national food safety requirements. Thirdly, consideration needs to be given to the formation of larger scale storage and final packing facilities through PPP and/or private sector support, and also to support these entities with marketing and branding. Prior to all these activities it is deemed important to undertake a detailed review of the cheese sub-sector and its markets in Nepal and internationally. Apart from the market study which will be given top priority all these interventions will be undertaken in parallel to ensure that the niche product is developed and expanded in a sustainable manner.

118. The Yak/Chauri herders/farmers and small scale Yak cheese processors residing in the four target districts of Solukhumbu, Ramechhap, Dolakha and Rasuwa will be the primary beneficiaries. At the later part of the project implementation through duplication to other high mountain regions, farmers and processors will also be benefited. Secondly, larger scale cheese processors and traders will be benefited. Thirdly, government staff and entities will benefit from improved training and capacity, as will the DFTQC through support to SPS and quality control procedures.

119. A total of two example requests have been identified for support from the HIMALI Agribusiness Support Fund (ASF) these being: (a) upgrading and rehabilitation of private sector Yak cheese processing units in the rural areas of a selected priority district, and (b) establishment of a private commercial cheese marketing company for a cheese packaging, and storage facility in Kathmandu through the formation of a private company or a PPP.

f. Potato and Vegetable Seeds

120. There is a big demand for quality vegetable and potato seed grown in Nepal, both within the country and in other neighbouring countries like Bangladesh. This however does not apply to India because it is trying to protect its own seed industry. While the seed sector in Nepal is in its relative infancy, quite a lot of work has been done in the past, including efforts by the DFID funded Seed Sector Support Project (SSSP), UNDP's MEDEP, FAO and the WB District Seed Self-sufficiency Project (DISSPRO). Also involved is the FNCCI/AEC which has done a value chain analysis of the seed sector and the Seed Entrepreneurs Association of Nepal (SEAN) which is working with cooperatives and farmer organisations in seed production. Jumla is ideally suited to the production of high quality seed as a result of the dry climate and the low incidence of pest and diseases, however there are production problems with the need for high levels of field management and monitoring, and the importance of irrigation.

121. Currently private commercial companies are involved in the production of some vegetable seed particularly carrot, beans, green leafy vegetables, cauliflower and radish, all of which are high value and low volume ideally suited to the high altitude areas like Jumla and Mustang. In contrast presently no seed company is interested in production seed potato as this is considered too risky; this may however change with the introduction of the production of True Potato Seed (TPS) which is much less bulky and hence more easily transported. Another important issue for seed production and marketing is the legal framework and seed certification process for the seed sub-sector. While the basics of the regulatory framework are in place and many institutions are involved more needs to be done to improve the law particularly for vegetable and flower seeds, and to manage and monitor the production of quality certified seed. Main problems with seed industry are: (a) difficulty of obtaining good quality basic seeds; (b) processing; (c) no interest from international seed companies to become involved; (d) problem of the small size of the land holding and lack of mechanisation effecting profitability as all work is done manually; and (e) the regulatory process.

122. Vegetable seed is a good enterprise as it is the only one where farmer groups and cooperatives are used to contractual production of high value crops. Counter to this is the fact that if farmers are close to the road head (within 3-4 hours walking distance) they would prefer to grow fresh vegetables which command a much higher net profit when compared to seed production.

123. Nepal imports more than 90% of its vegetable seeds from countries like Japan, Netherlands and Australia (often via companies in India) and from India at high costs. Vegetable seed is a high value/low volume product, and a small plot already provides considerable cash income, and offers a promising strategy to reduce poverty and the increasing food insecurity in remote areas of Nepal, especially the temperate regions found in the high altitude districts.

124. Production demands little external inputs except for the foundation seeds which in all cases are provided by the seed company as this is one of the important ways to guarantee quality seed production. It is labour intensive, which usually is not a problem for poor households. Companies are usually interested in several varieties of seeds, allowing poor to spread risks, making them more climate change resistant, and also able to include quick yielding varieties. Seed production does require considerable technical skills, which will initially not be there with both poor and better off farmers, hence technical training and follow-up is crucial. Also contractual production is already quite established in the seed sector, reducing risks for both the company and poor producers. Attention needs to be given to make sure that the crops receive sufficient water at important stages of the production cycle. In the case of Jumla, existing groups of poor already participating in the Poverty Alleviation

Fund (PAF) activities have been selected for seed production, which will allow them to make use of PAF investment possibilities and saving schemes for seed production.

125. A total of four important leverage points in the apple value chain have been identified, these being: (i) work with the private sector seed companies to engender their greater involvement in vegetable seed production in the high altitude districts through a range of appropriate incentive packages; (ii) the provision of improved technologies, infrastructure and equipment to private entities, farmer out-growers for the processing, storage and packaging; (iii) the GoN is to work with all concerned stakeholders of the sector to develop both an appropriate pricing structure and also a better and more focused legal framework, and (iv) SEAN and other stakeholders from private and GoN to undertake a detailed review of the vegetable seed sector

126. The main beneficiaries will be farmers, farmer groups, and cooperatives involved in production of seed and also the private sector entities involved in the seed industry. The consumer (the vegetable grower) would also benefit from the availability of better quality and viable seed of improved varieties. The other beneficiaries would be GoN entities which are centrally involved in the seed sector.

127. A total of two example requests have been identified for support from the HIMALI Agribusiness Support Fund (ASF) these being: (a) support to the formation in Jumla district of sustainable vegetable seed production units linked to private sector seed companies and provided with the necessary collection, processing and packaging facilities, and (b) support to assist SEAN and other stakeholders from private and GoN sectors to undertake a detailed review of the vegetable seed sector.

6. Trade Corridors and Markets

128. Access to suppliers, services and markets is a serious constraint in mountain areas. ADB road connectivity projects are in the process of constructing selected new feeder roads and upgrading existing district/rural roads to all-weather condition which will connect district headquarters with strategic roads and rural market and service centres. It is intended that HIMALI will build upon improved connectivity for implementation in districts with high potential for niche market development namely in Jumla district where the Surkhet-Jumla road is already under construction; in Mustang district, where the Jomsom road is already in use; and in Solukhumbu district, where the Harkapur-Okaldhunga-Salleri road constructed by the ADB DRILIP Project is nearly completion. Presently all these roads are considered to be seasonal with problems during the period July to September due to land slides.

129. There are three distinct trade corridors connecting the three pilot districts to the terai. For Jumla the trade corridor is from Nepalganj (190 km all weather road) via Surkhet to Jumla (236 km road out of which 170 km going to be upgraded with WB funding during the next 2 years; the other 66 km will take another 3-4 years to complete). Currently the road is operational only for 8-9 months of the year, with July to September closed due to landslides. It takes 2-3 days to travel by road from Jumla to Surkhet. There is a daily air link between Nepalganj and Jumla. There are no regular haat bazaars in Jumla.

130. As regards the Mustang corridor the route is from Pokhara via Beni to Jomsom, with the Pokhara to Beni section an all weather road. Also the Beni to Jomsom road a seasonal road not so much of a problem as compared to the Jumla road, as it is in a rain shadow area so less problems in the rainy season. There is however a 30-40 km stretch in the middle which is problematic. It is planned to have this road operational in 4-5 years. Total length of the road Pokhara to Jomsom is 158 km; Beni to Jomsom is 80 km. There are regular daily flights from Pokhara to Jomsom but these can be delayed by high winds and bad weather.

131. Cost of transport by road Jomsom to Pokhara is NRs 5-6/kg (need good packaging as road is rough). However this can be as high as NRs 15/kg depending on the trading situation and the load carried. Can get lot of spoilage with apple damage as high as 50% if sent by truck. Government gives subsidy for transport. Other costs are: Jomsom-Pokhara helicopter NRs 55/kg, plane NRs 35/kg, mule NRs 16/kg, truck NRs 5/kg. Labour cost is high in Mustang/Jomsom at NRs 500/day. DCCI transit taxes one truck load NRs 200 (NRs 1/bag) not compulsory (Pokhara). There is no regular haat bazaar in Jomsom.

132. For Solukhumbu there are two main routes Bharatnagar (all weather road) via Okhaldhunga to Salleri (donkey and tractors; takes one day for a tractor to go from Okhaldhunga to Salleri), and Kathmandu (all weather road) via Jiri to Salleri by porters and donkey. From Kathmandu to Jiri by truck 200km takes one day; Jiri to Salleri by mule takes 3-4 days, and Okhaldhunga to Bharatnagar takes one day by truck. The seasonal road to Salleri from Okhaldhunga was funded by ADB and SDC and is currently only for tractors and light trucks. The district has four airports namely Lukla, Phaplu, Kangel and Syangboche, with many regular daily flights to Lukla because of the tourist trade.

133. As regards transport costs for Solukhumbu district these are as follows: a porter costs NRs 1,000 for 50 kg for 2 days; professional porter charges in Jiri to Salleri NRs 24 per kg with total weight of 60-65 kg done in 3 days; donkey/mule for 2 days NRs 8/kg with max weight of 50-60 kg; tractor costs are for 1 km/1 kg cost is NRs 1; Air freight costs NRs 45/kg Salleri to Kathmandu.

134. Solukhumbu has weekly markets in Salleri Saturday; Nela Baazar Tuesday; Necha Bazaar Thursday and Satang Saturday. Namche and Lukla are daily because of the tourists (goods coming in by air every day and also regularly by donkey).

7. Public Private Partnerships

135. Public Private Partnerships (PPP) refer to the collaboration between public entities and private companies to realise public projects and objectives, arranged so that tasks, responsibilities and risks are optimally allocated among the partners. Over the last 20 years, PPPs have been increasingly recognised as a viable option for realising development objectives. However, experience with PPPs is not exclusively positive. The following range of views on PPPs are frequently expressed: (a) PPPs are particularly useful for implementing large-scale projects, primarily based on contractual relations between public and private entities, mostly through design–build–finance and operate/maintain (DBFO or DBFM) type contracts; (b) PPPs are an instrument for generating private-sector creativity which may contribute to the cost coverage and thus fast implementation of various socially desirable projects; (c) PPPs are a structure in which public and private entities cooperate, preferably in a separate legal entity, which can be applied in various sectors of the economy; and (d) PPPs do not affect public responsibility. Government stays responsible. Under public responsibility, firms are invited to provide services either to government or directly to the public.

136. When assessing the potential contribution of PPPs to social and economic development, a strategy is needed for (at a minimum) the policy formulation, project preparation and implementation stages of PPP development. For each stage, initiatives should address all relevant stakeholders. These at least include: a sponsoring government entity (most likely national); local government; the local private sector; international donor and lending agencies; (inter)national commercial lenders; (inter)national project investors; the end-users of the project; and trade unions.

137. The definition of PPP is “A contractual agreement between a public agency (Government at central or local level) and a private sector entity to share the skills and

assets of each sector in delivering a service or facility for the use of the general public, and also share the risks and rewards inherent in it". The objective is to encourage and enable private sector to undertake such services and facility which it will not undertake simply based on 'market forces and mechanism' due to varied reasons: low returns on investment or the levels of financial or non-financial risk involved and so on.

138. Modalities for PPP may be different depending upon the nature of the services and sectoral requirements. PPP in agriculture development will require specific considerations different from other sector and activities.

139. Why PPP in agriculture and for agriculture development in Nepal? To achieve agriculture development approach of: high-value/low-volume, cash crop based, market led, export oriented and private sector driven development strategy for Nepal. Prescriptions for this strategy are: (a) strong agriculture research and supporting technologies for agro-enterprises; (b) encouraging private sector investment; (c) supports and facilitations to agro-enterprise development; (d) enhance of partnership; (e) institutional development for agro-enterprises; and (f) conducive government policy.

140. **Public-Private Partnership Efforts:** To facilitate the above prescriptions a Tripartite Partnership between Government, Donor and FNCCI was initiated in 1992 with the establishment of Agro Enterprise Centre (AEC). One of the objectives was the institutional development in the private sector that could facilitate mobilization of private sector investment for achieving the above stated agriculture development strategy. Such partnership which could be termed as PPP in today's terminology has worked very well and has contributed towards achieving the agriculture development strategy.

141. As regards PPP activities, AEC has implemented and is continuing a wide range of programme activities under partnership arrangements. Those have also been emphasised as potential PPP activities in the "National Agriculture Policy 2004" and include: (i) research and development programs involving food and nutrition, production, collection, grading, storage, processing and packaging; (ii) commercial production, processing and marketing; (iii) agro technology extension services; (iv) market information system (development, expansion and flow); and (v) establishment and management of agricultural product collection centres, wholesale markets, haat bazaars.

142. The Agribusiness Promotion Policy 2006 has also further emphasized and elaborated the possible PPP activities within the framework of the National Agriculture Policy 2004, namely: (a) launching of programs delineating specific commercial production areas; (b) organic production, (c) establishing agri-product export areas; and (d) business service centres. Recent PPP initiatives are:

(i) One Village One Product (OVOP) program involving GoN, FNCCI/Chambers, DDC/VDC.
(ii) "Commercial Agriculture Alliance" as non-profit company formed to assist Commercial Agriculture Development Project (CADP) of ADB/GoN involving FNCCI, Agro-enterprises, DDC, and cooperatives.
(iii) Market management committees.

143. One of the achievements has been the strengthening of private sector institutions at different level to undertake partnership programmes of different nature and magnitude in the country. Currently, AEC/FNCCI is implementing programme activities in "partnership" between: (a) Government and AEC/FNCCI, (b) Government, AEC/FNCCI and Commodity Associations, (c) Local Government and Local Chambers, (d) Government, private companies and farmers' group, and (e) Government, AEC/FNCCI and Donor/NGO/INGO.

144. The GoN Budget Speech 2008-09 and PPP in agriculture emphasized collective roles of private, cooperative and public sector, and Government's facilitator role in the development of private sector and cooperative sector; however too much priority has been given to cooperatives in terms of incentives, supports and subsidies. Furthermore, PPP approach is signalled for (only) capital investment that will help motivate domestic and foreign investors to invest in the priority sectors, and agriculture related PPP programs are not emphasized even in the National Agriculture Policy 2004 and Agribusiness Promotion Policy 2006

145. As a result of the unclear and confusing policy statements in 2008-09 Budget Speech, there are some grey areas covering the potentials of PPP in agriculture: For example: How the proposed 'High-Level Investment Board' will cater to PPP in agriculture? Will the proposed 'New Industrial Policy' be facilitative to PPP in agriculture? Will the postulated 'Scientific Land Reform and Comprehensive Land-use Policy be conducive for encouraging PPP in agriculture? All these issues will need to be addressed by GoN.

146. Lessons learnt from the PPP initiatives and actions conducted over the last 10 years in Nepal are as follows:

(i) There is needed a clear and transparent Government's PPP approach in agriculture.
(ii) Pre-determined set of different conditions for PPP necessary (Rules of Game).
(iii) Government's policy should be stable.
(iv) Public sector often expects more from private sector instead of equal partnership.
(v) More supports for private sector capacity enhancement needed.
(vi) Public sector mindset to retain control over resources often handicaps PPP.
(vii) Lending practices of financial institutions are not yet conducive for agricultural PPP.
(viii) Both public and private sectors should be very aware of each other's problems and issues.
(ix) Mutually supportive and complementary roles of both sectors need to be well identified.
(x) Need for developing appropriate legislative provision for clarification of entry conditions, incentives and concessions, suitable working and procurement procedures, contractual structures, and risk mitigation and arbitration.
(xi) Both should keep the project and outcomes in focus rather than maximizing their own interests, and collaborate for mutually enduring value.
(xii) Donors' involvement in PPP projects is very crucial for its success.
(xiii) Appropriate institutions are well established in private sector to undertake and facilitate PPP activities at all levels.
(xiv) Agriculture sector is special in various considerations, including the involvement of 'subsidies' and taxes, therefore, it requires separate considerations for implementing PPP.
(xv) The target group is farmer and agro-enterprises (not general public). Thus, the public sector often represents the farmers.

147. Some specific program areas for PPP which need to be taken into account by HIMALI project are: agriculture education, agricultural extension services, agriculture research with patent rights guarantee, seed production program, fertilizer production, establishing Agro-Export Processing Zones, quality testing and certification labs (SPS & TBT), adoption of Good Agriculture Practice (GAP), export promotion and generic product promotion, and food security through barter exchange.

148. As outlined in the ToR for this agribusiness assignment the outputs are to: (a) design the institutional mechanisms for the PPP best suited for the particular product, (b) suggest the potential private sector players for each product to be approached for partnerships, and (c) suggest for each selected product at what level PPP should be established and the nature of involvement. These are detailed in the specific value chain appendices attached to this working paper and in the working papers of the other technical specialists on the HIMALI PPTA.

149. Potential funding opportunities through a PPP are: (i) support to preliminary processing of MAPs at the VDC level with community groups in Jumla and Mustang; (ii) development of apple juice processing plants in Jumla and Lower Mustang with cooperatives and private entities; (iii) establishment of off-season vegetable collection and packing centres in selected VDCs in all three pilot districts; (iv) support to wool processing with farmer groups in Jumla; (v) large scale support to the establishment of a central cheese processing and storage facility in Kathmandu with concerned private sector companies and the DDCorp; and (vi) support to private sector seed companies in the establishment of vegetable seed out-grower farmers with the provision of infrastructure for processing and packaging in Jumla district.

8. Funding Mechanisms for Value Chain Development

150. In the past a number of attempts have been made to provide grant and loan funds to farmers and agribusinesses with mixed success. Basically the commercial/financial sector in Nepal is not geared up to support agriculture or agribusiness. Furthermore, the main problem in high latitude areas is the lack of financial support as it is only mainly available in urban centres. Also it is not possible to provide the whole requirements through grant support as is not sustainable, should be a mix of grant and loan. The lessons learnt from a number of key entities in the agriculture financial sector are as follows:

(i) Rural finance through the **Agriculture Development Bank** (ADB/N) has for the most part found providing loans to farmers and agribusinesses problematic. The main problems were when unsecured loans given out through the GoN Small Farmer Development Project where repayment rates was near zero, and because of the high risks to ventures in agro-processing loan failure rates were high. If loans are secured the bank had no real problem with loan recovery rates.

(ii) DFID funded **Agriculture Perspective Plan Support Project** (AAPSP) ended end 2008. Under this project had a **District Agriculture Development Fund** (DADF) in all twenty APPSP districts to support to objectives of reducing poverty and exclusion. The implementation of the fund was fraught with problems most of which were found to be due to the poorly managed procurement process.

(iii) The ADB **Crop Diversification Project** (CDP) which was completed in 2007 has established the **National Agriculture Research and Development Fund** (NARDF) in December 2001 and is ongoing, in order to involve the private sector, non-government organizations, civil society, educational institution and the public sector in promoting and implementing agricultural research and agricultural development activities. NARDF works on Competitive Grants System providing equal opportunity for all participating applicants. The objective of the fund is to provide full or partial grants for proposals aimed at alleviating poverty through overall development of the agricultural sector, for the improvement of livelihoods of farmers and entrepreneurs. The NARDF which is not focused on the agribusiness sector has had problems of not being able to properly monitor the projects resulting in inefficient use of the grant funds.

(iv) The ongoing ADB **Commercial Agriculture Development Project** (CADP) and a grant funding vehicle known as the **Commercial Agriculture Alliance** (CAA). The CAA is a non-profit making company and the fund modalities are dependent on the type of funding required, with either 50:50 grant: beneficiary to payment for loans with services, such as training and which are non-infrastructure in nature, or as compared to 75:25 for loans with infrastructure and large equipment. The CAA is supporting value chains for cardamom, tea, oranges, tomato, and potato for example. CAA awards sub-projects for beneficiaries with a total to date of 14 commodities supported. Lessons learnt are that there is a mismatch between what is spent and what is needed – e.g., for potato >90% for value chain is on production, there is a huge demand for potato and market is not saturated. The main problem is production, also storage and packing, but not really on marketing. Also the CAA is hard to manage because of the fact that farmers are spread over a wide area making monitoring a big problem.

(v) The newly started WB **Project for Agriculture Commercialisation and Trade** (PACT) with implementation via the FNCCI has under its first component – Agriculture and Rural Business Development – a grant funding mechanism entitled the Value Chain Development Grant (VCDG). The objective of this component is to enable farmers to engage in profitable market-oriented production and to promote partnerships and market linkages with other value chain participants and agribusinesses. It is intended that component will help agro enterprises, commodity associations, cooperatives and farmer groups to actively engage in the development of commodity value chains by partially financing demand-driven investment proposals through a competitive matching grant. It will also support investments aimed at strengthening viable enterprise-based farmer institutions that are linked to other value chain participants and are actively engaged with the markets. The specific activities supported under this component are: (i) providing pre-investment advisory support to enable farmer organizations (FOs) and value chain participants to prepare subproject proposals and business plans for grant funding under the project; (ii) financing of approved subproject proposals in technology support and market infrastructure; and (iii) agribusiness development through financing of demand-driven investment proposals by agro enterprises, commodity associations and cooperatives that are actively engaged in the development of commodity value chains. It is currently too early to judge how this funding support mechanism is achieving its objectives.

(vi) The SNV will be providing support to the IFAD **High Value Agriculture Project** (HVAP) due to start in mid-2010. The aim is to assist IFAD in its agribusiness approach – inclusive business – producer-buyer agreements. For this it is soliciting the support of qualified NGOs to support the various entities/enterprises involved in the apple and vegetable seed value chains in Jumla district and other districts in the Karnali region. The approach used by SNV/IFAD is much simpler than that of CADP/CAA and PACT and will be reviewed as a potential modality for the HIMALI agribusiness development finance.

151. It should be noted that the Project Steering Committee requested the HIMALI PPTA to not include a new funding institution like the CAA in the CADP. MOAC suggests the approach is costly, the institutional linkages are difficult to achieve and not appropriate for the limited commercial capacity in the high mountain area, and wide range of possible agricultural products and enterprises. However, a demand-driven approach for commercial agriculture development, whereby the farmers and private sector identify their needs, is favoured against the old supply-driven approach in which experts, donors or government picked a few high value products and tried to promote their commercialization through

technical, financial and infrastructure support. The ADB Agriculture Sector Performance Review found this old-style supply driven approach did not result in decentralization, did not strengthen necessary value chain linkages and transformation required. Commercial reality means that farmers and enterprises were often interested in different products and services than what was chosen by projects and their needs related not just to production, but to gaps in their business plans and their ability to develop and implement those plans.

152. Under the HIMALI Component 1 - High mountain agribusiness support fund accessible to private sector – will be providing funding along the value chain by an Agribusiness Development Fund (ASF). This component addresses private sector development investment issues and constraints along the supply chain for value addition. The project would establish a fund accessible by applications from farmer groups, cooperatives, women's associations, agro-enterprises and other entities for the purpose of further developing and implementing niche product business development. Applicants would have to meet appropriate criteria which will be developed under the PPTA based on lessons learned from similar existing mechanisms (see above), and the criteria would include contribution from the applicant. The fund's implementation modalities will be thoroughly assessed by the PPTA and existing fund models such as the one implemented by the CAA will be explored for possible collaboration and synergies(refer to PPTA Financial Management Specialists Working Paper). A Project Management Office (PMO) at central and district level and district agriculture and livestock line agencies would assist applicants to prepare applications. If appropriate, even DDC and FNCCI at district level could be involved in preliminary assessment of proposals.

9. Regulatory Standards and Certification

153. Quality improvement is central to the success of the niche product improvement under HIMALI, this includes ensuring that produce and products meet specified national and international standards, both quality and food safety standards. Also over time national standards should link to WTO agreement/procedures and should include an analysis of food and other standards for the niche products5. Important for food items particularly cheese, for seed quality, certification and phytosanitary, for the trade requirements (WTO) of wool and chyangra pashmina, MAPs, apple for organic standards. It is important to note that at this time there are no consumer rights enacted as law in Nepal. The key issues related to standards are as follows: (a) the need to follow national and International certification requirements, (b) prior to WTO had the National Standard Certificate which covered certain commodities and goods with individual product standards, these now export products need to conform to WTO standards for SPS and food safety, (c) WTO requires 8% of input raw materials into goods to be from country of origin in order to be stated as made in Nepal, (d) standards to be followed include Codex Alimentarius, Fair trade, traceability, HASSP, ISO9000, ISO1725, ISO9001, ISO2200, GMP, GVP, GLP, and (e) currently no laboratory in Nepal is accredited for WTO standards, need a WTO National Certification Laboratory (presently upgrading DFTQC laboratory).

a. Food Safety and Quality Control

154. The Department of Food Technology and Quality Control (DFTQC) under MOAC is the GoN entity responsible for all matters related to food and product safety. It is the contact point for Sanitary and Phyto-Sanitary (SPS) with WTO. It has unit for fruit and vegetable processing and preservation, which is a training unit which currently needs to be up-graded; undertakes training and provides technical support to farmers and food processors. It also

[5] Agriculture Sector Study on Commercialisation, SPS and Quality Control (ANZDEC/FBC) 2007 February.

has Central Food Laboratory for analysis of all food items, this is currently not accredited which is one area of concern especially with regard to WTO. UNIDO is assisting the DFTQC in attaining this accreditation which is expected to happen with the next year. In food Quality Control have 5 regional offices – also do monitoring of food quality through inspection and sampling of foods at retail, wholesale and processing business entities. This is to check if food meets the Nepali Food Standards prescribed by GoN. Have also 5 food quarantine checkpoints for both import and export of food items. Also runs the National Nutrition Program for children and lactating mothers.

155. DFTQC has problems of resources and lack of resources, need more efficient analytical methods e.g., mobile labs, improved procedures. NORAD is providing support. The laboratories have lot of sophisticated and new equipment but the staff are not properly trained on how to use this equipment. Analyse 5,000 samples/yr. Labs look very much under-utilised. Shortage of reagents is an issue. The DFTQC has in Kathmandu a pilot unit where train farmers and food processors especially from the highland areas also have units in the regions including one in Jumla. Undertake 2 regional trainings per year for around 20 persons each. Need support with new facilities both in Kathmandu and in the district units. Trains farmers in solar drying and food storage (cellar store [4-6^{o}C], etc.).

156. PACT is providing support to food standards through its SPS, Food Quality Management and Infrastructure Improvement Component. The objective of this component is to establish SPS systems which meet international standards in order to (i) improve food quality and safety, (ii) reduce obstacles to trade in food and agricultural products, and (iii) improve animal and plant health. The project will establish an SPS and food quality control system that ensures high quality and safety of Nepalese agricultural products from producer to the consumer. An holistic and integrated approach will include: review and amendment of the legislative framework to include SPS requirements, strengthening of a pest and disease monitoring and surveillance capacity, improvement of testing laboratory infrastructure and equipment requirements in the public and private sectors, improved technical and managerial skills in both sectors, establish programs of good practice for producers (crops and livestock), processors/manufacturers, quality assurance programs such as HACCP, additional resources, programs and systems that deal with SPS and quality control issues from producer to consumer and to international standards.

157. Key institutions for instance the DFTQC will be strengthened to increase the capacity of regulatory authorities, and private sector stakeholders from producers to consumers, to understand and implement SPS measures. A phased program of improvement of facilities and equipment will be supported under the project, possibly in association with other potential donors, to upgrade laboratory and quarantine facilities to meet the international SPS requirements including risk assessment for management of agricultural imports and exports and strengthening food monitoring and surveillance and laboratory technology training. Technical assistance and training to assist government authorities to implement the above institutional strengthening program including formulation of SPS strategies, systems and implementation arrangements, specific technical training on SPS issues, and to formulate and introduce a Good-Practice approach to production, processing and handling of agriculture and livestock products in line with requirements of the SPS Agreement.

158. This will require an extensive campaign to raise general awareness of SPS issues followed by targeted programs to introduce Good Agricultural Practice (GAP) and Good Veterinary Practice (GVP) in production areas, Good Manufacturing Practice (GMP) in food processing industries, Good Laboratory Practice (GLP) in regulatory laboratories and quality assurance programs such as HACCP. Educational institutions will receive support to be able to produce the number and capability of future manpower requirements. Greater awareness of food safety issues among consumers will also increase pressure on the food processing, food wholesale and retail industries to improve their practices.

b. Organic Production and Certification

159. There is a growing interest in the organic production of agricultural commodities and niche products in Nepal. For example Jumla districted has been made an organic district by the DDC and DADO and apples from that district are now being marketed as organic apples. For this 17 Wards in 3 VDCs in Jumla district have been officially accredited by the Organic Certification of Nepal (OCN) the only certified accreditation organisation in Nepal. However there are a number of importance concerned and problems related to the organic production and certification: (i) the OCN is not internationally accredited so that if produce is exported it cannot be stated as being organic for this an accredited international organisation needs to be involved, (ii) there is very little awareness among the consumers about the meaning and benefits of organic production, (iii) with global warming influencing negatively the incidence of crop pests and diseases there is a need for R&D on alternative biotechnical approaches to the control of these problems, (iv) agro-vets and GoN technical staff need to be familiarised with the alternatives to traditional chemical control methods and products made available, and (v) it will be important to brand goods as organically growing/produced to differentiate them between conventionally produced products.

c. Seed Quality Regulation and Certification

160. None of the seed produced in Nepal is certified seed. In Nepal seed is only “Truthfully Labelled” seed where the quality is declared by concerned trader/seed company and is not certified. Seed law stated that all seed should be at least Truthfully Labelled but is not properly enforced. There is weak plant quarantine in Nepal but strong quarantine in India, hence making it difficult to export seed to India as the latter does not accept Nepal certification. Unofficially seed goes however to India from Nepal in the name of food grains hence illegal trading exists. SAARC is mandated to try to harmonise the whole issue of seed testing. Seed testing lab in Kathmandu under MOAC is designated member of International Seed Testing Association (ISTA) which is for auditing the seed testing certificate. Phytosanitary certification with Plant Quarantine Office of DOA (import and export of seed). Quality control procedures in place but not followed and procedures not clear for some crops including vegetables. Seed quality control comes directly under the MOAC. The matter of intellectual property (IP) for seed varieties and other products needs to be addressed.

161. The seed system in Nepal was given legal coverage through promulgation of Seed Act, 2045 (1988), which has recently been revised. The objective of this law is to maintain the convenience and economic interest of the general public by providing seed of high quality in a well planned manner upon producing, testing and processing to improve crop production6. Necessary institutional infrastructure has been established as under: (a) National Seed Board (NSB), with the Variety Approval, Release and Registration Sub-committee (VARRS), Planning Formulation and Monitoring Sub-committee (PFMS), and Quality Standards Determination and Management Sub-committee (QSDMS); and (b) Seed Quality Control Centre (SQCC), which has three units, the Central Seed Testing Laboratory (CSTL), Seed Certification Unit, and Seed/Variety Registration Unit.

d. Basic Approach to Niche Product Quality and Safety Management

162. Niche products depend on quality as well as identification of origin. The HACCP – hazard analysis critical control point – food safety system is a method to identify food safety (and/or quality) risks in agriculture production and food processing and handling (Table 6). It is now part of Codex Alimentarius (FAO/WHO) and ISO 22001. In the production and process flow, different practices are used to control problem risks (Table 7). Any stage at

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[6] Shrestha CB and Wulff E, 2007 in Seed Sector Country Profile Nepal.

which it is essential or critical to prevent a quality or safety hazard is a critical control point. A CCP for certified Nepali origin wool might be placing a registered herder's mark on a sealed wool pack.

Table 6: Example of a Food Safety Hazard Risk Analysis

Type of Hazard	Source	Frequency	Severity	Control *critical control
Biological *Examples:* *E. coli* *Clostridium sp.*	Water, manure, rot, mould	Common	*High* - immediate can be fatal	Safe water, compost only, cold storage, Good Hygiene Practice (GHP), *cleaning, *pasteurization
Chemical *Examples:* *Pesticide (Organophosphate, Organochlorine), Heavy metal, Detergent*	Pesticides, fertilizer, pollution, Cleansers, PVC	Medium	*High* - long-term health damage	Good Agricultural Practice (GAP), Certified Organic Practice GHP, *chemical application at registered rates and withholding period, *food-grade cleansers only
Physical *Examples:* *Stones, plastic, hair*	Dirty area, Workers or animals, Decaying equipment, packaging	Common	*Low* - quality issue	GHP *Good equipment maintenance *cleaning

Table 7: Example of a Process Flow and Control Procedures at Points

Process Flow (Activities)	Example Quality & Safety Control practices
Site selection	Soil test for contaminants, Buffer zone, diversion drains or fences to prevent entry of contamination
Planting	High quality seed, resistant variety, remove weeds, herbicide according to label
Growing	Pesticides or animal treatments either herbal or according to registered label, IPM, composted - not fresh manure on crops
Harvest, shearing, milking	At maturity, not over-mature, harvest only sound healthy product
Processing	Cleaning, sorting, grading, chilling, pasteurization
Packaging	Grading and inspection, material and construction which prevents contamination, damage and loss of quality
Distribution	Safe handling and storage
Marketing	Label instructions for optimum storage and use

10. Branding Strategies

163. Branding is a way for businesses to differentiate their products and services and establish a reputation that will build customer loyalty. Brands vary as to the type of information conveyed and the audiences targeted. For example, some brands are used by grower associations in the wholesale trade, while others are widely advertised and prominently used in consumer markets. Not every branding program needs to aim for national or global fame. The resources required to establish famous trademarks, such as Sunkist, are out of reach for many groups of growers. Yet, branding can be accomplished with a smaller, but still, useful scope, involving relatively low-cost steps that capture value for farm products. Of course, several factors about a particular product will influence branding feasibility or type of brand to develop. For example, with some commodities that cooperatives sell in bulk form, branding can be developed as an identity-preserved program.

Many co-ops brand services in addition to products, which are often licensed to other cooperatives or businesses.

164. Niche product marketing and branding is done by public and private sectors. The value chain concept encompasses the sequence of productive processes – primary production, transformation, trade, and marketing/export of agricultural products. Value chain promotion by the state is especially important where markets are poorly organised, i.e. where there is an absence of grades and quality standards or a lack of price transparency, technology, infrastructure and services, or where market access is restricted. For long-term economic success on the world markets, the coordination of production and marketing processes is becoming increasingly important. Often, an individual producer's competitive position depends on the other companies involved in the production of a high-value product. The rules are often controlled by the major trading or industrial companies and smaller producers have no option but to adapt to these conditions. Transparency and an understanding of these challenges are essential to enable the state to promote a country or location's competitiveness for specific export products in a targeted way.

a. Inspection and Certification

165. A good starting point for differentiating products is to consider some of the inspection and certification programs offered for example the one by USDA's Agricultural Marketing Service (AMS). AMS marketing agreements provide inspections and certification for agricultural product distributors who are voluntary signatories of an agreement. By contrast, other AMS inspection programs are compulsory, such as those in marketing orders. Certified product attributes in a marketing agreement may offer more opportunity for branded differentiation to the extent that they are not mandatory for all similar products in a specific market.

166. Differentiating a product as "organic" is a significant attribute. Consumer demand for organic food has rapidly expanded, with AMS certification playing a critical role in this expansion. Certification under the National Organic Program is mandatory for products offered or advertised as organic. In contrast to verifications of end-product standards, the National Organic Program involves certifying adherence to a specific set of production practices.

167. AMS provides auditing in its Identity Preservation Program, which producers and handlers can use to assure customers of product origin. Identity preservation is useful for many row and tree crops and livestock products. In the fruit and vegetable sector, AMS provides Good Agricultural Practices and Good Handling Practices Audit Verification (GAP & GHP). AMS auditing and certifying programs are a way for growers to differentiate their products, and when combined with cooperative marketing, members achieve critical mass for gaining better market access. A brand can be linked to certified quality attributes by applying either small stick-on labels or stamp printing on bulk produce or printed on packaged products.

b. Trademarks

168. In the United States and other developed countries, trademarks are created by adoption and use in connection with products and services. Government registration of a trademark can assist an owner's effort to prevent others from using brands and logo designs that are likely to create consumer confusion about which companies are the source of particular products.

169. A trademark also gives a business more control in how others may use its brand. While a brand can be developed without registering it as a trademark, registration protects its value

and helps grow the goodwill of the business associated with its brand. A registered trademark may develop into a significant asset of the cooperative.

c. Service Marks

170. The term “trademark” frequently refers to the brand name of a product, but it is also a general term for other types of branding. Trademark law includes branding of services and product certifications that involve different rights and regulations. These other types of trademarks also relate to different business applications used by cooperatives and companies.

171. Branding a service is often similar to the naming of a business, and many service marks are also the trade name of a company or cooperative. Typically, when referring to a trade name, the indicator of organizational form — such as Inc., Ltd., or LLC — distinguishes it from a service mark when the same name is used. For example, a cooperative has the trade name GROWMARK Inc., and GROWMARK is its trademark for products and its service mark for “agricultural cooperative services, namely, cooperative advertising and marketing services and retail distributorships of agricultural products.”

172. Service marks are frequently used by federated organizations. They can function as a collective membership mark for members to use to indicate their membership in the federation. In addition, a federation may develop a program of services for its local members and have it registered under a service mark to maintain control over its contents for the membership. Service marks are also applied to many other business structures or situations. Consider a co-op that wants to offer its service program in a new market where much of the customer base is non-member. The co-op may want to contract with other businesses or co-ops for carrying out its service program in the new locations. As part of such a contract, it would need a registered mark to license the service program to others.

d. Certification Marks

173. Trademarks are also used for certification. Candidates for this type of certification in agriculture are defined growing regions and product attributes created by following specific agricultural methods that are not routine or standard practice for an industry. The owner of a certification mark may function as the certifier, who specifies the criteria for products that can be labelled with the mark. The French have a long history of using this type of marketing strategy, such as Roquefort cheese or Champagne as examples. Certification marks are often used for an exceptional or special type of agricultural or food handling practice. Inspections and certifications usually apply to standard industry practices, as in the case of the development of an industry standard for organic production procedures.

e. Financing Brand Development

174. Growers can participate in certification programs that would distinguish their products from those supplied to the market by non-participants. If dealers have a preference for products with a particular certification, growers can take advantage of such opportunity by identifying their products with a brand. Gaining a reputation with consumers usually involves supporting a brand with advertising and promotion. There are some government programs outside Nepal (e.g., USA) offering assistance with promotion for special conditions, such as export marketing. Co-branding is an effective way to gain access to the distribution system of large food processing and packaging firms. Many firms want to use products from farmer cooperatives or from those that can certify a quality attribute.

175. A program for branding agricultural products can be implemented in several ways and with different objectives. Aiming for an internationally famous brand is not the only worthwhile objective. For many commodities branding is often not a cost-effective strategy except when there are opportunities for identity preservation or some form of certification. Even if you only market products to wholesale dealers or other distributors, branding may help build your

product's reputation. The value added to a business by branding products and services often increases over time. As consumer markets evolve, and possibly move in the direction of customers seeking more attributes that cooperatives can supply and guarantee, branding will likely increase.

176. With the above in mind it useful in the Nepal agribusiness context to try to suggest possible branding strategies for product promotion and taking into account local traditions and culture, district development strategy (organic district of Jumla) and niche potential for national and international markets.

177. Strategies for each niche product are complex, especially for niche products like MAPs which have a very wide range of products and outlets, and for which in many cases the processors either in Nepal or abroad have branded their products with great success to the consumer. Some brands identify Nepal as the source of origin while others just rely on the interest the consumer may have on the specific active ingredient.

178. While a start has been made on branding Jumla apples as organic a lot more needs to be done for this product in making the brand more apparent and creating a higher degree of awareness amongst the consumers, both for the fact that the apples are from Nepal and that they have been grown in an organic environment free of chemicals. Similarly, there is also a market for organically grown vegetables however these needs to be packaged in a proper manner with suitable logo's and brand for the district/location in which they are produced.

11. Linkages with ICIMOD

179. Because to the fragility of dry highland ecosystems, the sustainable use of natural resources is crucial to maintain long-term ecosystem stability and ensure socio-ecological resilience as the basis for sustainable livelihoods. The following negative impacts can be expected due to climate change in arid mountain regions: (i) rising temperatures, and changes in quantity and timing of precipitation, resulting in sudden dryness and flash floods, and influencing traditional and contemporary farming practices, productivity, and livestock systems; (ii) permafrost melt, affecting land usage and slope stability; (iii) changing seasonal patterns, affecting transhumance and nomadic livestock migration patterns; and, (iv) less predictable annual melting regimes of upstream glaciers and snow packs, and changes in hydrological cycles impacting downstream domestic water and energy needs.

180. In this context, unsustainable exploitation of mountain niches can result in the elimination of these diverse agri-products particularly as a result of the increasing fragility of dry highland ecosystems. A study of niche-based farming of horticultural crops in the Nepalese mountains shows that high economic benefits result in a crops spreading rapidly. Nevertheless, subsequent soil nutrient losses and diseases occur frequently and hamper the sustainability of benefits.[7] Furthermore, the increasing use of pesticides on horticultural crops has been reported, and poses additional health and safety challenges.

181. A niche-based mountain perspective views marginal lands not as a constraint to productivity but as a huge, untapped potential resource, if appropriate technological choices are made and sustainable technologies and management practices which are adapted to changing arid mountain conditions are introduced. Sustainable production and quality improvement will take place in Jumla district where better land use and water management practices of apple orchards will be introduced to apple farmers. In Mustang district, improved sheep and goat production will be combined with better rangeland management practices and fodder development. Climate change adapted natural resources management interventions will be tested and demonstrated by an associated Participatory Action

[7] Tuladhar J.K. et al 1998. Towards Sustainable Soil Fertility Management in the Hills of Nepal. Lumle Agricultural Research Centre. Pokhara.

Research[8] (PAR) under HIMALI PPTA Component 2 by the National Agricultural Research Council (NARC) and the International Center for Integrated Mountain Development (ICIMOD) and funded by the Climate Change Fund. If found successful, the examples of better land use and water management practices will be upscaled under the ensuing grant/loan project, and funded under HIMALI Project Component 5 – Research and Development. At the same time, the opportunity will be taken to collect scarce data to document climate change impacts in arid mountain areas for usage in regional climate change data bases.

182. The rationale for HIMALI project intervention is that improvement of production is essential for the success of agribusiness and livelihood improvement and different soil and water management technologies will play key roles in improving the production. Several technologies are available, but its' testing and modification may be required to suite the local socio-economic and physical conditions. ICIMOD will carry out the PAR in testing and modifying these potential technologies with reference to the climate change context in coordination with NARC and relevant local institutions including CBOs/NGOs in the selected sub-watershed.

12. Linkages with Other High Altitude Countries

183. There are many similarities between the high altitude districts of Nepal and neighbouring China (Tibet) and other parts of the Hindu Kush Himalayan (HKH) region, namely, Pakistan, NW India, Sikkim, Bhutan and Mongolia, see Figure 2.

184. It is important to draw upon lessons learned from other similar projects in the region and establish links with stakeholders across border. Nepal has a lot to gain from these collaborative actions and it will be especially important in the value chains for livestock products like wool and Yak cheese (known as Ragya Yak cheese in Tibet), and MAPs. Currently there is a good market in Tibet for Chyangra pashmina and high altitude herbs. In the latter case ICIMOD has the MAPPA program focusing on MAPs

Figure 2. The Hindu Kush Himalayan Region

[8] Participatory action research (PAR) is not just research which is hoped will be followed by action. It is the action which is researched, changed and re-researched, within the research process by participants. It aims to be active co-research, by and for those to be helped. PAR is ideally with the participation of the local people and for the local people. The PAR is designed to address climate change specific issues that affect agricultural production, identified by local people; results are directly applied to the problems at hand, until a satisfying solution to the problem is found.

13. Livelihood Improvement

185. The envisaged Project contributes to reducing poverty by increasing income opportunities for communities in the comparatively poorer mountain areas through mountain niche product development and by improving their living conditions through sustainable watershed management practices, associated multi usage water systems and orchard and rangeland improvement. It is envisaged that the application of appropriate agricultural technology and promotion of market linkages by value addition through enhanced local management capacity will significantly improve livelihoods of marginal mountain people. An example of this is the support to the livestock sector as in many ways the current production of Yak cheese and wool are not economically viable and it is only through the provision of support to livelihoods and the focus on social good that change can be brought about.

B. Opportunities and Constraints

186. Reference should be made to the Appendices 1-6 for specific details on the opportunities and constraints for the six value chains studied in this Working Paper. Only general comments on these issues are presented in this sub-section.

1. Constraints

187. Numerous factors constrain stakeholders in the process of development of commercialization. The constraints affect both smallholder farmers and other stakeholders including the private sector traders and entrepreneurs, NGOs, line agencies and financial institutions. Technology constraints exist both at the production level and through processing and distribution systems; limited access to markets, credit and information and poor infrastructure constraints are crosscutting issues in each of the value chains studied.

188. Some of the more important generic constraints can be listed as follows:

(i) **Organization of community into groups or cooperative** is imperative, particularly for the poor producers/traders to achieve optimum scale of operation. In the three pilot districts, the groups and cooperatives have been found to be organizationally very fragile and lasting only as long as the project/programme duration. Reasons leading to failure of groups/cooperatives must be fully investigated and addressed and in this context the existing groups can be socially mobilized and reorganized with no need to create other parallel groups.

(ii) The **infrastructure** for HIMALI niche products production and trade is found to be very weak and inadequate. This has increased transaction costs of the producers/traders and foiled the value addition opportunities. The recommended physical infrastructures are: (a) access or link roads between production and market centres, culverts and bridges; (b) the gravity ropeway which does not require fuel or electricity and suitable for remote rural areas; (c) market infrastructures – mini and large mandis, collection and processing centres, cold storage (including small cellar, rustic and pit storages in the villages), weighing bridges, wholesale yards and stalls, and (d) small irrigation facilities.

(iii) Various **technical training to different stakeholders**, i.e., producers, traders and service producers are essential in order to enhance the much needed skills and technical knowhow to achieve efficiency in the process of commodity flow at various levels which really contribute to value additions.

(iv) **Research and Development** (R&D) is the crucial component to be included as part of project design. There is a need for further R&D on livestock breeding and production, watershed and rangeland management, improved

vegetable and fruit varieties, the domestication of priority MAPs, improved post harvest processing are but a few of the important issues demanding attention.

(v) In view of the **lack of coordination among value chain agents and actors** in the pilot districts and the monopoly and carteling system prohibiting easy entry into the chain, there is need to develop networks for promoting contract farming system for all crops.

(vi) The project requires **supporting the vertical networking of the value chain system**. This will result in low risk for overall supply in the event of crop failure; ensure more flexible production portfolios of smallholders together with higher quality of products and greater dependency of the smallholders on the production part.

(vii) **Effective M&E system** has to be introduced as part of project design which will make use of baseline information for evaluating incremental project performance; monitor the compliances set forth by the project at different levels and for all actors involved and ensure that adequate indicators for poverty, gender and inclusion have been incorporated to address the issues.

(viii) In view of the **weaknesses observed in policy implementation** in agricultural and forest sector, the Project needs to influence them in such a way that these are reformed and rectified where needed and enforced effectively

2. Opportunities

189. A review of previous projects in Nepalese agriculture demonstrates that there has been a production focus with limited attention to issues relating to the supply of critical inputs and access to output markets. Project design should therefore focus on creating competitive value chains and increasing linkages along the value chain rather than on production. Producers require greater prominence and influence in the value chain, as currently across all the chains studied the production end of the chain is invariably the least profitable.

190. The need for involving stakeholders other than line agencies in the implementation of the project. The beneficiaries of a commercialization project will necessarily be stakeholders already involved in some degree of commercial agriculture. Unless these beneficiaries are actively involved in the implementation of the project, it will be difficult for the project to successfully develop and sustain commercial agriculture. Other projects show that when producers, marketers and processors have been actively involved in implementation there has been a stronger response of beneficiaries and higher benefits of project activities.

191. Provide adequate institutional assessment of the various stakeholders involved. Too often, projects are implemented through line agencies and other organizations that are not necessarily in the position of successfully implementing the project. In the case of a commercialization project, there are several challenges that are likely to be faced by agencies (e.g. the DOA) that traditionally have focused on production with limited consideration for marketing, processing and trade, or without the institutional capacity or the mental orientation to look at inter-sector linkages between agriculture, industry and services. This incomplete institutional assessment is true not only for government agencies, but also for non-government agencies, such as NGOs, farmer groups and associations and the private sector.

192. Other opportunities and recommendations for inclusion in the project design are: (a) the important need to initiate a niche product development fund (Agribusiness Support Fund) for the private sector; (b) align and reduce tariffs and duties for specific value chains; (c) develop and implement norms and grade standards, pass the seed law and regulatory laws for pesticides and fertilizers; (d) establish a strategic vision of transport needs for people

and products; (e) expand and build on the DOA and FNCCI/AEC market information systems; (f) closely involve the FNCCI and the various DCCI's in the project districts in the implementation of the project; (g) promote cooperative and group action between producers and input suppliers; (h) develop quality management and quality standards; (i) provide support to certification and regulatory entities in government through provision of equipment and training; (j) develop training material and establish for-free training cycles; (k) introduce "farming as a business" training plus simple, record-keeping and minimal book-keeping training; (l) create incentives for the development of new innovative and locally produced farm and value chain processing machinery for key commodities; (m) provide training and support to service providers that can solve industrial waste; and (n) initiate the approach of contract farming as a mechanism to coordinate linkages between farmers and agribusiness firms.

3. Leverage Points

193. The major constraints, opportunities and leverage points for the six value chains are presented in Table 8.

Table 8: Value Chain Constraints, Opportunities and Leverage Points

Value chain	Constraint	Opportunity	Leverage Point
Wool	• Productivity sheep & goats is low • Pastures are poor and in need of improvement • Livestock pest & diseases • Poor quality antiquated post-harvest processing of wool • No use in Nepal carpet & pashmina industry of locally produced wool & chyangra • Carpet industry in decline	• Assist farmers in Jumla and Mustang with improved management of sheep and goats, and improved methods of processing wool. & pashmina. • Improved breeds of sheep and goats • Improve pasture management • Improved pest and disease control • Support to carpet industry through by GoN	• Support to GoN for livestock breeding • Support to communities in rangeland management • Support to agro-vets and farmers in animal health • Support to farmers in post harvest processing of wool & pashmina. • Support to carpet and pashmina industries in provision of quality raw material from Nepal (WTO ruling) • Improved legal framework and support to textile industry
Cheese	• Poor variable quality cheese due to hygiene, packaging, storage and transit issues • Low milk output of Nak and chauri • Declining herd size • Static demand for Yak cheese in Nepal • Low prices paid for cheese due to government subsidies	• Improvements to herd health , breed and management • Improvements to cheese processing & hygiene • Support for better packaging, storage and trans-shipment of cheese • Need assistance in branding and marketing of Yak cheese to improve image & awareness • Changes to the pricing structure of cheese	• Support to herdsmen in Yak herd management • Support to rural private processing enterprise in improved cheese making • Support to the supply chain in better packaging, transit arrangement and storage • Marketing studies and awareness campaigns through FNCCI/AEC & private sector entities • Support to DLS, DDC, NDA to change pricing of milk products • Support to DFTQC for better cheese hygiene and regulation
Apple	• Low quality & production of apples • Unsuitable apple varieties being cultivated • Lack of improved production technologies • Poor and inadequate storage and post harvest	• Improve apple variety research & development according to market demands • Improve management of orchards • Improve pest & disease control through bio-	• Support to MOAC for apples research • Farmer community support in improvement orchard management, including organic farming technologies • Support to framer groups, cooperatives and traders in

Value chain	Constraint	Opportunity	Leverage Point
	packaging of fresh apples • Post harvest processing is often poor producing low quality products • Marketing of organic apples is inadequate with customer awareness low • Understanding of the fresh and processed apple trade and markets is poor	technology & sustainable NRM techniques • Make changes to the way in which apples are packed, stored and trans-shipped • Improve the methods with which apple is processed as dried fruit, juice, jams/jellies, and alcoholic beverages • Create general public's awareness of the benefits of organic produce	proper packing and storage of fresh apples • Support to private entities in the post harvest processing of apples • Undertake a market survey & awareness creation campaign through FNCCI/AEC & other concerned public private entities
Off-season vegetable	• Poor field management of vegetable crops • Inadequate awareness by farmer of the correct timings, varieties and other technologies for off-season vegetable production • Poor packaging, storage and marketing • Little understanding of improved technologies such as greenhouse cultivation and irrigation • Inadequate awareness among farmers for organic production • Poor links between producers and the markets	• Introduction of improved crop management techniques • To give advice, equipment and possibly infrastructure to farmer groups, cooperatives & traders in storage, packaging and marketing • Create awareness amongst public consumers of the benefits of organic vegetables • Improve links between producers, middlemen, traders and markets at all levels, District, regional and national, and along the trade corridor.	• Provide training and other support to producers of off-season vegetables • Support to agro-vets in sale and technical knowledge of crop inputs including seed and bio-technical products • Support to cooperatives and private entities in the safe storage and packaging of off-season vegetables • Undertake a market survey & awareness creation campaign through FNCCI/AEC & other concerned public private entities • Make greater use & upgrade the market information systems for fruit & vegetables, especially for use by traders
MAPs	• Management of MAPs that are collected in Jumla is poor • MAP domestication is not well understood & poorly researched • Current management plans for MAPs are inadequate • Confusion as to the legal framework for MAPs which are domesticated and also for the management and collection of MAPs from forests • The current trade in MAPs is undertaken by a cartel which is little understood & there is no full & proper understanding of the markets for the wide range of MAPs traded • Very little processing of MAPs is done with most sold directly to international buyers in just	• To undertake research & development activities on the whole management aspects of MAPs, including domestication • Create awareness amongst the rural communities in Jumla about the proper management and collection, domestication techniques for NTFP/MAPs • For the concerned GoN entities to work with private sector (producers, collectors & traders) in developing appropriate legal framework for management & trading of MAPs • Greater understanding is required of the workings of trade in MAPs	• The MOFSC to work with, ICIMOD, JABAN & other private sector entities to develop appropriate management approaches for MAPs. • MAP collectors and cultivators to be made aware of improved sustainable management techniques for the harvesting, cultivation, primary processing of economically important MAPs • The GoN with the sector stakeholders to develop appropriate legal framework for the MAPs, including more fair means of taxation and regulation

Value chain	Constraint	Opportunity	Leverage Point
	the raw dried form	• The need to identify & develop appropriate processing methods for MAPs to reduce transport costs & improve marketability	
Potato and vegetable seed	• The past activities in Jumla involving the production of vegetable seed using cooperatives has not been successful • The production of potato and vegetable seed of quality is little understood and the market not fully determined • Post harvest processing of vegetable seeds is not well developed • The profitability of vegetable seed production at the farmer level is low, mainly as a result of the high subsidy applied on the prices for seed produced on government farms which undermines the seed sector in the districts • There is currently very little involvement of the private sector seed companies based in Nepal in producing seed in the high altitude areas • The seed law and regulatory framework for the sector is confusing & out of date	• The opportunity here is to involve the private sector in seed production through a range of incentives & funding support • Improved production technologies and post harvesting processing will add value to the VC through better quality seed • There is a need for the GoN to review the pricing structure for the sale of vegetable seeds, especially that which is paid to farmer out-grower • The relationship between the cultivation of off-season vegetables and vegetable seeds needs to be better understood, currently farmers prefer to grow the former • There is important need for GoN to address the whole issue of seed sector both as it applies to Nepal & more specifically for high altitude areas of the country	• Work with the private sector seed companies to engender their greater involvement in vegetable seed production in the high altitude districts through a range of appropriate incentive packages • The provision of improved technologies, infrastructure & equipment to private entities, farmer out-growers for the processing, storage and packaging • The GoN is to work with all concerned stakeholders of the sector to develop both an appropriate pricing structure & also a better & more focused legal framework • The SEAN & other stakeholders from private & GoN to undertake a detailed review of the vegetable seed sector