# 2. Strategies to Support Innovation and Entrepreneurship

*Chapter Highlights*

- There are large divides in innovation input and outputs across country income categories; developing countries seeking to catch up with successful middle-income and high-income countries must build their capacity to innovate.
- The Bank Group can play a vital role in helping build countries' innovation capacities, enabling them to acquire, adapt, and use innovations that have been developed elsewhere.
- Bank Group support for innovation and entrepreneurship in client countries can be enhanced in several ways, including support for technical and entrepreneurial capabilities and knowledge exchange.
- Bank Group strategic documents have signaled support for innovation and entrepreneurship, but they have not articulated an overarching vision for policy action.
- Myriad activities support innovation and entrepreneurship across the Bank Group, but a well-coordinated cross-sectoral set of actions has not yet emerged.

Experience from country perspectives helps illustrate the dimensions underscored by the conceptual framework developed for this evaluation. Countries at different levels of development increasingly recognize that innovation is critical for maintaining a competitive edge in the global economy, as well as for facilitating economic diversification and economic progress (OECD and World Bank 2009; OECD and IDRC 2010; UNCTAD 2011). These countries are seeking more effective ways to translate scientific and technological knowledge into new products, processes, and business models that foster innovation-driven growth. Some have requested support from OECD and UNCTAD for in-depth review of innovation policy in order to diagnose their innovation systems and identify policy priorities to enhance their innovation performance (OECD and World Bank 2009; UNCTAD 2011).[9]

This chapter examines strategic approaches to innovation and entrepreneurship within the Bank Group, looking at trends and drivers in innovation processes in a variety of country development contexts. The chapter also assesses the extent to which key issues relating to innovation and entrepreneurship are addressed in Bank Group strategies. It concludes by identifying some principles that can be used to

formulate policy priorities that support innovation and entrepreneurship in Bank client countries and that have been reflected in the conceptual framework of the evaluation.

The analysis of trends and drivers of innovation processes is based on a background paper that includes country case studies covering 10 countries at different stages of development.[10] The assessment of Bank Group strategies is based on a desk review of recent Bank Group corporate, sector, regional, and country strategies over the past decade or more.

Client countries are looking to the World Bank Group to help them develop strategies and design policies and programs to facilitate innovation-driven growth that strengthens competitiveness (Yusuf 2009; Devan 2012). Some governments, with support from the Bank Group, are also pursuing strategies and initiatives to address inclusive innovation and environmental sustainability (Box 2.1 and Box 2.2).

**Box 2.1. Inclusive Innovation in Government and World Bank Group Initiatives**

Governments and development agencies are focusing on generating inclusive innovations, using policy instruments that induce the private sector—working on its own or in partnership with the public and nongovernment sectors—to create and disseminate innovations that relevant for underserved market segment. Examples of government and Bank Group initiatives include:

- The Indian government declared 2010–20 as the Decade of Innovation and has set up a billion dollar Inclusive Innovation Fund to strengthen entrepreneurship and enterprises engaged in developing solutions benefiting the poorest of the poor.
- In 2002, the Chinese government posted scientists to rural areas to help farmers start small and innovative businesses. As of 2011, 170,000 scientists had been dispatched, and the businesses they helped build up have attracted more than $700 million of financing and benefited 50 million rural households.
- The World Bank's ITE practice aims to foster inclusive innovation by strengthening private sector innovation and entrepreneurial capacity.
- IFC's Inclusive Business Models Group managed the "G20 Challenge on Inclusive Business Innovation."

*Source:* IEG.

Environmental sustainability issues, particularly innovative approaches to deal with climate change, have featured prominently in some country policy dialogue with the

Bank Group. China's Country Assistance Strategy (CAS), for example, focused on enhancing innovation and promoting development of the environment and energy efficiency, including new energy and new energy vehicles. The Bank Group has helped clients create incentives and mobilize resources that have supported the development, demonstration, transfer, and diffusion of climate change–related innovations. Box 2.2 provides examples of some of these initiatives.

**Box 2.2. World Bank Group Support for Innovation in Climate Change**

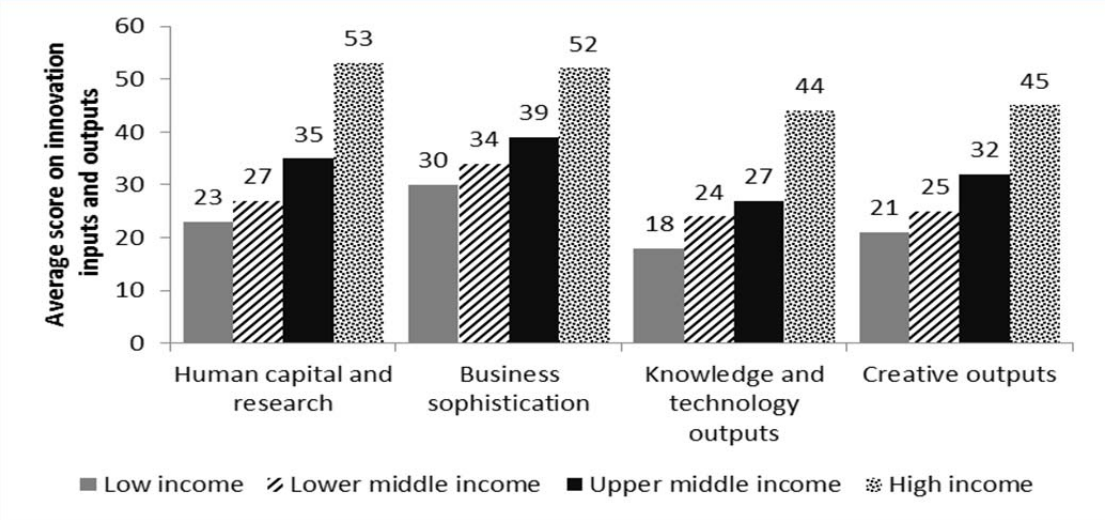
Bank Group initiatives supporting innovative climate change initiatives include

- Participation in the Clean Technology Fund, a multidonor trust fund created as part of the Climate Investment Funds to provide scaled-up financing for the demonstration, deployment and transfer of low-emissions technologies that have significant potential for long-term greenhouse gas emissions savings
- Financing such the Forest Carbon Partnership Facility, climate risk management products, and "green bonds"
- IFC's Climate Business Group, targeting innovative investments including technology transfer and opportunities for SMEs
- Work with the Global Environment Facility in financing several initiatives, including projects that focus on clean energy technologies.

*Source:* IEG.

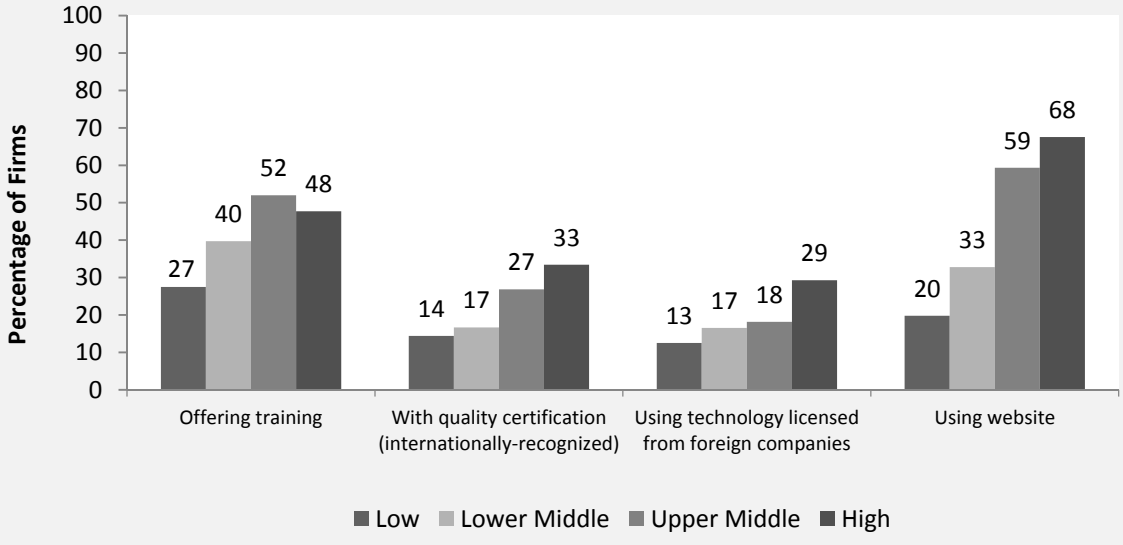
In many emerging economies and developing countries, innovation frequently involves acquiring and making effective use of technologies that already exist and that are in widespread use elsewhere but may be new to the firm or the market, or used in new ways. Measures of innovation show that, on average, innovation linkages—the productive interaction among firms, the public sector, universities, and society—in most low- and middle-income countries are weaker than those in high-income countries.[11] INSEAD's innovation measures show that innovation outputs and inputs are strongly correlated with income levels (Figure 2.1). On average, innovation performance is stronger in high-income countries than in middle- and low-income countries.[12] Data from the World Bank Group Enterprise Survey also show strong linkages between country income levels and selected correlates of innovation (Figure 2.2).[13] There are large divides in innovation across geographic regions, with average performance in the more dynamic upper-middle-income countries in Southeast Asia such as China and Malaysia much higher than those in Africa, South Asia, and Latin America.

## Figure 2.1. Average Scores on Innovation Inputs and Outputs, by Country Income Group




*Source:* Global Innovation Index.
*Note*: Of the 141 countries in the index, 21 are low-income countries, 36 are lower-middle-income, 40 are upper-middle-income, and 44 are high-income.

## Figure 2.2. Percentage of Firms Engaging Innovation Activities, by Country Income Group




*Source:* World Bank Group Global Enterprises Survey, 2006–10.
*Note*: This covers 106 counties and 46,556 enterprises.

## Building Innovation Capacity at the Country Level

Innovations may come from knowledge and technologies from foreign sources, from other users in the economy, or created by domestic research from public institutions, universities, and private firms. However, increasingly many innovations are emerging from developing countries, including incremental and frugal innovation that has led to the redesign of products and business models that significantly reduce costs.[14] The strengthening of innovation capacity has been an important factor in countries that have experienced rapid and sustained economic growth. Emerging economies and developing countries seeking to pursue development strategies that foster growth must build the capacity to acquire, disseminate, and use technologies to promote innovation and encourage new and existing firms to invest in business opportunities.

The Bank Group can play a vital role in helping countries build their innovation capacity. There is no unique path to innovation that drives development, but experience shows that countries have used a variety of strategies to foster innovation and entrepreneurship.[15] The 10 country case studies done as background for this evaluation emphasize several elements as important drivers of innovation performance in these countries—the enabling environment, including a modern information and communication infrastructure; support for R&D and human capital development; and entrepreneurial capabilities and linkages to tap into global knowledge and financing arrangements (appendix C). All these elements are directly linked to the context and targeted interventions identified in the conceptual framework for this evaluation.

### GETTING THE ENABLING ENVIRONMENT RIGHT, INCLUDING INFORMATION AND COMMUNICATION TECHNOLOGIES

The development and transfer of scientific results and inventions and their application to address development challenges or improve social welfare is less effective if the environment is not enabling. Similarly, entrepreneurs need an environment that is conducive to investment in innovative activities that develop new ventures and create jobs.

Countries with strong innovation performance demonstrate that getting the policy and institutional environment right is very important to ensure that policy measures (such as STI and entrepreneurial incentives) targeted to boost innovative activity and foster entrepreneurship are successful. A supportive policy and institutional environment are critical both for the incentive to innovate and for the allocation of resources. Singapore's excellent investment climate and supportive regulatory environment have played a key role in the country's successful innovation-driven growth, creating striking levels on innovation outputs and one of the most

competitive economies in the world. High levels of investment in human resources or R&D are not sufficient if they are not allocated to activities that improve competitiveness.

Russia provides an example of the importance of the policy and institutional environment for the incentive to innovate and allocation of resources. Significant investments in human capital and R&D in Russia have not translated into a dynamic innovation system or competitive economy. Even though there have been significant political and economic developments over the past decade, growth in the economy is driven by oil and gas exports. Investment in other sectors is unattractive and the competitiveness of Russian enterprises in the global economy is eroding in key sectors such as manufacturing. Recently, attention has been given to reforms and initiatives that will help develop an economic and institutional environment that encourages investment and risk taking—and that rewards such efforts.

As part of the enabling environment, ICT offers many opportunities to help build entrepreneurial capabilities by facilitating technology uptake and firm competitiveness. Rapid advances in ICT have helped reduce transaction costs and coordinate economic and social activities. For example, ICT facilitates easier access to global knowledge for scientists and innovators from developing countries; it also expands markets for entrepreneurs. These investments have therefore provided a complementary infrastructure for an effective knowledge-driven and entrepreneurial economy. In doing so, they facilitate linkages between various actors in the domestic and global innovation system.

An effective information and communication infrastructure has been an important factor for countries with the most successful innovation strategies. Most of them, like China, Korea, and Singapore, have also become major producers of ICT hardware because that sector offered many opportunities for production and trade. In addition, the ICT sectors are still undergoing rapid technical change and are at the forefront of innovation in many areas, ranging from automation and process control to social media. Many countries are increasing R&D in ICT because it still offers many innovation opportunities. Some developing economies with low per capita incomes have been very effective users of the innovation potential offered by these generic technologies and have been leaders in their innovative applications, as in the successful example of mobile money, M-Pesa in Kenya.[16]

### SUPPORT FOR R&D AND HUMAN CAPITAL DEVELOPMENT

To acquire and use knowledge, developing countries need R&D capability as well as education and skills. The mix of education and skills may be different, but some R&D capability is necessary to follow and obtain knowledge from abroad and adapt

it to local conditions. Furthermore, domestic capability is necessary to benefit from the knowledge spillovers from FDI.

Singapore is a relatively small economy, but it has made significant efforts to develop strong STI capabilities that permit it to take advantage of its intense interaction with the global innovation system. Countries like Kenya and Rwanda have made some progress, such as the innovative application of mobile money in Kenya and the use of mobile phones to provide up-to-date market pricing information to farmers, consumers, and traders in Rwanda. But these countries still have incipient STI capabilities, which make it more difficult for them to benefit from the global system. China, in contrast, has strong domestic capability; combined with a strategic government, it has been able exploit global knowledge through formal means as well as by copying and reverse engineering.

Investment in basic, secondary, and tertiary education and skills development is critical for building innovation capacity in developing countries. India succeeded in ICT-enabled exports because it has a critical mass of educated and trained engineers. However, the low education and poor skills of its labor force have been major constraints to developing a competitive labor-intensive manufacturing export strategy. Investments in human capital and research need improvement to achieve higher levels of growth and innovation in India.

Good secondary and tertiary education is necessary to be able to absorb global knowledge and to move the value chain to more productive technologies, as China has done. In addition, well-trained scientists and engineers are the basic input into more sophisticated R&D activities. China is investing massively in tertiary education, particularly for scientists and engineers, in pursuit of its aim to be a major innovative power. The need to invest in high-level human capital to improve innovation capabilities is a lesson that Brazil and Chile have also learned.

### STRENGTHENING ENTREPRENEURIAL CAPABILITIES AND LINKAGES BY TAPPING INTO GLOBAL KNOWLEDGE

The direction and extent of innovation are shaped, in part, by learning processes that take place within and between firms (Arnold and Bell 2001; Bell 2007). Tapping global knowledge through various forms has been critical in many countries that have successfully developed innovation-driven and entrepreneurial economies. There are variations on how countries use global knowledge and technology as a strategy to foster innovation. Singapore, for example, continues to rely very heavily on FDI and global expertise. In contrast, Korea's strategy was to tap global knowledge but maintain local control. Thus, Korea limited FDI and opted instead to develop local knowledge through trade (capital goods, technical assistance,

technology licensing, copying and reverse engineering), foreign education, and training, attracting its technical Diaspora back and investing heavily in R&D.

China has used all these strategies, but it has also been very effective at tapping FDI. China and India have benefitted from the spread of ideas through the Diaspora. In China, the technology industry is dominated by the Diaspora; the Indian Diaspora also maintains strong linkages with their home country. For example, Indian computer scientists in Bangalore constantly exchange ideas with their colleagues in Silicon Valley.[17] Both governments and firms benefit when they develop networks and skills by tapping into the global market through the Diaspora.

### FINANCING SCHEMES

Countries have used different financing schemes to support new firms and innovative entrepreneurs. To address many capital market failures and challenges facing small innovative firms, governments have provided angel capital and venture capitalists some special tax breaks or other benefits such as guarantees to help offset the extra costs and higher risks involved with innovative activities. China and Malaysia have provided special tax breaks to the first or pioneer firm to produce a new product, process, service, or form of organization. India and Korea have adopted the concept of the Small Business Innovation Research, a public-private partnership initiative developed in the United States, to provide incentives for entrepreneurs to develop new products, processes, and services.

In sum, this analysis of country experiences provides some insights about innovation strategies in the development context. It does show that innovation strategies must be diverse, because countries differ in their resource endowments, challenges, and needs. Local market and policy realities help shape robust innovation strategies and foster entrepreneurship. Within this diversity of experience, five common principles emerge that can be useful in developing a framework to formulate more effective policies and programs that promote innovation and entrepreneurship:

- Support public investment in R&D that focuses on improving efficiency and relevance to end users, as well as strengthening the use of research results in public policy decisions.
- Build domestic STI capabilities to make effective use of global knowledge. Education and skills depend on investment in basic, secondary, and tertiary education and other chances to learn, as well as investments in science and technology. Such investments are integral to building an adequate enabling environment.

- Strengthen linkages between public R&D and private sector users of knowledge and technology and knowledge flows to the private sector. Incentives and other cost-effective mechanisms are needed to diffuse knowledge from R&D to firms and other end users. This includes entrepreneurial capabilities to leverage global knowledge and technology. In virtually all successful cases, tapping global knowledge was critical. Key channels for doing this include FDI, trade, foreign education and training, and attracting skilled and knowledgeable expatriates back to their country.
- Build a strong enabling environment, including effective use of ICT in a wide range of applications to foster innovation and benefit from the many business opportunities that ICT offers and significant investments in education and skill development.
- Provide flexible financing arrangements to encourage innovative firms to undertake risks in developing new products, processes, and services.

Each of these principles relates to the major intervention areas identified in the conceptual framework (see Figure 1.1). The next three chapters focus on targeted interventions and mechanisms that the Bank Group has used to address these issues, their performance, and the lessons that can be drawn from case studies and project evaluation. In the meantime, it is worth emphasizing that experience shows that countries are well advised to get the broad-based enabling environment right, including the effective use of ICT. Creating a supportive policy and institutional environment is fundamental to incentives, rewards, and risk taking, as well as innovation performance and success of policies and programs that foster innovation and entrepreneurship. In this sense, the enabling environment directly or indirectly affects all the targeted interventions.

Improving the relevance and efficiency of research systems and strengthening domestic STI capabilities are critical in supporting public and private R&D. Firms are at the center of innovation processes; thus, strengthening knowledge flows to the private sector, including those from global sources, is helping build entrepreneurial capabilities. Incentives include financing schemes and other forms of support that help firms address financial and capital constraints that enable them to innovate. Strengthening knowledge flows is also crucial in fostering linkages among the actors in an innovation system.

## Innovation and Entrepreneurship in Corporate, Sector, Regional, and Country Strategies of the World Bank Group

Bank Group client countries are increasingly requesting support to help them develop innovation strategies as well as design policies and programs that would enhance innovation as an engine of growth. Issues relating to innovation and entrepreneurship have been addressed in various Bank Group strategies and policy documents. This section reviews how the issues have been addressed in corporate, sector, regional and country strategies to get a sense of the extent to which strategies address country needs in these areas.

Besides corporate strategies and select regional and country strategies, IEG's analysis focuses on strategies in four sectors where the bulk of the Bank Group work on innovation and entrepreneurship are concentrated: agriculture and rural development (ARD), private sector development (PSD), education, and ICT. PSD and ICT strategies are joint World Bank–IFC strategies, reflecting strategic directions in the two institutions; recent strategies and action plans in education and ARD involve collaboration across the World Bank Group.

### CORPORATE STRATEGIES

At the corporate level, two strategic documents developed during the period covered by this evaluation provided some perspective on the evolution of thinking on innovation within the Bank Group. The 2001 Strategic Framework acknowledged the growing importance of the private sector and the development potential inherent in rapid technological advances. The document provided a framework for selectivity but left sector and country strategies to make the hard choices. More recently, the 2010 Post-Crisis Directions Strategy identified fostering innovation and competitiveness as an important policy action that will guide Bank Group efforts to achieve the strategic priority to create opportunities for growth. The strategy highlights several elements of the enabling environment, such as a robust investment climate, competition, policies that create a stable and sound financial sector and promote foreign investment, as critical requirements to encourage innovation, productivity, and a vibrant entrepreneurial private sector.

IEG's review of four annual strategic documents prepared by IFC—the 2000 and 2001 Strategic Directions and 2011 and 2012 Road Maps—found that the early documents barely acknowledged the importance of innovation in IFC's agenda. The later documents discussed the importance of PSD as a prerequisite for innovation, but discussion of specific support for innovation was mostly limited to climate change, with mention of a plan to include innovation as a priority in a forthcoming middle-income countries strategy.

Of the three MIGA Strategic Directions papers reviewed (FY05–08, FY09–11, and FY12–14), the FY09–11 strategy paper paid the greatest attention to innovation. But its focus is more on innovations in MIGA's product offering to its clients than on ways to support innovation at the corporate and country level.

The growing attention to innovation across Bank Group corporate documents, as well as IFC and MIGA strategic directions, seems to signal to staff and development partners that the innovation agenda is increasingly important. But these strategic documents have not articulated an overarching vision for innovation and entrepreneurship. There is a focus on improving the enabling environment mainly within the context of better public policy and on supporting institutions for private sector growth. Less attention is given to policy measures targeted to foster innovation and entrepreneurship. The lack of a corporate-level strategic direction on the role of innovation in development process and limited articulation of innovation policies provides little guidance to staff on how to incorporate innovation and entrepreneurship activities more broadly in sector strategies and other work in the Bank Group.

### SECTOR STRATEGIES

Sector strategies provide a conceptual framework for the Bank's work in that sector, an inventory of its experience, a shared understanding of sector priorities among anchor and regional staff, and a means to communicate strategic priorities with external partners (IEG 2012a). The four sector strategy papers reviewed in this section emphasize innovation and entrepreneurship to varying degrees (appendix C).

Early PSD strategies highlighted some dimensions of the enabling environment, but the more recent strategic action plan pays specific attention to the enabling environment for innovation and entrepreneurship, entrepreneurial capabilities, and financing schemes for existing firms and start-ups. In the 2002 strategy, innovation and/or entrepreneurship are not strategic objectives or expected outcomes that PSD activities aimed to achieve. However, one of the three strategic pillars—extending the reach of markets—addresses some elements of the enabling environment for innovation such as investment climate issues. The strategy also addresses direct public support, including financing to firms, particularly SMEs. But it does not pay attention to financing issues or challenges faced by start-ups or innovative entrepreneurs.

The 2009 PSD Mid-Cycle Implementation Progress Paper (World Bank 2009c) identified mechanisms, such as matching grants, that can be used to help strengthen entrepreneurial capabilities in firms, but it did not identify actions to integrate them into its strategic priorities or programs. The absence of a clear innovation agenda in

the PSD strategy has meant a lack of serious discussion about how activities undertaken in the sector can support innovation and entrepreneurship. Without such discussion, there is little chance for the articulation of principles and guidelines for PSD support in this area.

More recently, FPD has identified innovation as one of its four strategic pillars, and the new ITE Practice has made policy for innovation systems, technology transfer and diffusion, financing linkages for entrepreneurship, and inclusive innovation and green innovation key pillars in its 2012 Action Plan. These priority areas focus attention on key innovation policy interventions.

Education strategies have covered the enabling environment (as per the conceptual framework in Figure 1.1), support to public R&D, and strengthening entrepreneurial capabilities through skills development among the pillars of the conceptual framework. The 1999 Education Strategy acknowledged that rapid technological change and greater exposure to global competition implied a need for a more educated workforce that can innovate continuously. But the impact of sector activities on innovation was not articulated within a comprehensive vision for supporting capacity building in STI. The pillars to be pursued in the strategy—basic education for girls and in the poorest countries, early interventions, innovative delivery of education services, and education system reforms—might help achieve the implied innovation objective.

The 2011 Education Strategy focuses on Learning for All, emphasizing the growing demand for technical and vocational education and training. One of its strategic priorities—strengthening educational systems—noted that a focus on tertiary education policy is necessary to promote STI. The strategy identified tertiary education in middle-income countries and skills development as a strategic priority. Supporting capacity building in STI is critical for building innovation capabilities and is a key component of public support for R&D. However, the focus in the current education strategy remained squarely on basic and secondary education and omitted any detailed discussion of how the Bank can support the building of STI capacity in client countries, including those in the low-income category.

ARD strategies have a long tradition of addressing public R&D in agriculture. More recently they emphasize a broad range of issues within the agricultural innovation system, including strengthening the linkages between technology development and other actors in the agriculture innovation systems. The 2003 Rural Development Strategy gave substantial attention to innovation. Although it is not the primary emphasis, the strategy asserted that the Bank would support "sustainable intensification through the application of science" to improve agricultural

productivity, continue to support agricultural innovation through the Consultative Group on International Agricultural Research, and help expand extension services so farmers could access new technologies. The focus has mainly been on support to public R&D systems, including S&T capacity building in agriculture at domestic, regional, and international levels.

Other interventions have focused on building the capabilities of farmer associations and fostering interactions among actors in the agricultural innovation system. The 2009 Agriculture Action Plan built on the consensus surrounding the 2008 World Development Report on agriculture and intensified the focus on innovation. The first pillar of the 2009 strategy focuses on raising productivity, which would be achieved largely through support for R&D-induced technology adoption to increase yields, the expansion of extension services, and scaled-up support for new technology generation with special emphasis on region-specific approaches.

In addition to formal strategies, the ARD sector published a sourcebook on agriculture innovation systems (World Bank 2012). The sourcebook addresses why investments in agricultural innovation systems are becoming important, as well as how specific approaches and practices can foster innovation in a wide range of contexts. It also provides detailed guidance on building, improving, and assessing country-based innovation systems.

The recent ICT strategy has put innovation at the core of its strategy, emphasizing entrepreneurial capabilities, financing for ICT entrepreneurs, and fostering linkages in innovation systems, such as in ICT-related business incubators. In addition, as a general purpose technology, ICT is an important component of the enabling environment for innovation and entrepreneurship (see Figure 1.1), but this aspect has not been emphasized in the ICT strategy. Innovation was not a strategic pillar in the 2002 ICT strategy, even though the document referred to organizational innovation as part of a successful implementation strategy to deliver its mandate.

This lack of emphasis on innovation changed with the 2012 strategy, which identified support for innovation as a strategic priority for the sector. “Innovation,” one of three pillars of the 2012 strategy, aims to advance ICT to improve competitiveness and accelerate innovation and target ICT skills development. The strategy articulates a vision for World Bank and IFC, working together to promote an enabling environment, strengthening entrepreneurial capabilities in information technology–related fields, financing that industry in emerging markets, and fostering linkages mainly through information technology–based business incubators.

This review of corporate and sector strategies shows that several dimensions of the enabling environment and targeted interventions for supporting innovation and entrepreneurship are being addressed in one way or another (see Table 2.1). However, these interventions are often designed and implemented within sectors with little or no coordination of activities or efforts to actively build on the comparative advantage of different sector teams to attain results at country levels. So far, the Bank Group has not articulated an integrated perspective for supporting innovation and entrepreneurship at the country level. A combination of actions across corporate and different sector strategic priorities is required in efforts to foster innovation and innovation in Bank Group client countries.

Table 2.1 Innovation and Entrepreneurship in Bank Group Strategies

| Type of strategy | Enabling environment | Support for public R&D including capacity building | Entrepreneurial capabilities | Financing schemes | Fostering linkages |
|---|---|---|---|---|---|
| Corporate | ✓ | | | | |
| Sector | | | | | |
| PSD | ✓ | | ✓ | ✓ | |
| ED | ✓ | ✓ | ✓ | | |
| ARD | | ✓ | | | ✓ |
| ICT | | | ✓ | ✓ | ✓ |

*Source*: IEG.
*Note*: ARD = agriculture and rural development; ED = education; ICT = information and communications technology; PSD = private sector development.

### REGIONAL AND COUNTRY ASSISTANCE STRATEGIES

At the regional level, FPD regional staff worked in close collaboration with network staff to develop innovation strategies for Europe and Central Asia and the Middle East and North Africa Regions in the World Bank. The Europe and Central Asia strategy, the goal of which is to raise productivity and competitiveness, aims to align its innovation, technology, and entrepreneurship activities and identifies future opportunities for innovation work. The innovation strategy for the Middle East and North Africa Region identifies two priority areas for its interventions—innovations that have the highest impact on challenges in this region and areas where innovation makes a difference for inclusive and sustainable growth. At IFC, the regional strategy for the Latin America and the Caribbean Region includes support for competition and innovation.

These regional strategies are a good start in articulating a regional vision for innovation, and they demonstrate how the new FPD configuration can help link regional and sectoral strategies. However, much more needs to be done to identify innovation strategies for countries at different stages of development, as well as to

provide a road map for how the regions would pursue the strategic priorities that have been identified.

Country demand for innovation and entrepreneurship is typically expressed in Bank Group CASs. To get a sense of the demand for such support, IEG reviewed CASs for 17 countries—6 lower income, 4 lower middle income, and 7 upper middle income—that had more than two innovation and entrepreneurship projects over the past decade.

The treatment of innovation and entrepreneurship in country strategies is varied. Upper-middle-income countries, such as Brazil, Chile, China, give high priority to innovation in their development plans. Chile's CAS, for example, states that the government's agenda begins with innovation because the country lags behind fast-growing knowledge economies. In Brazil, innovation and productivity are a crucial part of the country's growth agenda. The country recognizes that innovation policy and support for entrepreneurship are critical for improving productivity and competitiveness.

CASs for lower-middle-income and low-income countries also prioritize innovation and entrepreneurship to improve competitiveness as well as diversification from resource-based to knowledge- or innovation-driven development. In Uganda, the national development strategy recognizes the role of STI in its growth strategy. The Mozambique CAS acknowledges that firms in the country will need to become increasingly competitive globally, emphasizing innovation and competitiveness to promote employment and exploit new sources of growth.

Bank Group support for innovation and entrepreneurship has responded to the needs and demands from client countries. In Chile, for example, the government requested or indicated interest in interventions related to innovation and entrepreneurship. In Brazil, the Bank increased its support in competition and innovation policy, areas where the government had defined a program of initiatives to improve growth potential and competitiveness. The CAS for Croatia noted the importance of adopting innovative technologies to improve productivity and achieve European Union accession. Bank support was requested for enhancing the IPR and R&D in the private sector.

Most of Bank Group's development partners that are seeking to enhance competitiveness through innovation-driven growth recognize that an enabling environment (macro conditions, competition, business environment and regulations, intellectual property protection, and so forth) is critical. Armenia's CAS, for example, prioritizes Bank support for telecommunications and for establishing an

innovation fund for centers of higher education; Chile strives to design and implement policies that improve competitiveness linked to ICT, research and innovation; Mexico prioritizes improvements in investment climate, STI policy and infrastructure; and China emphasizes improved firm competitiveness by removing barriers to competition and putting in place incentives for innovation.

Several CASs identify support for public and private R&D and capacity building as key elements of their innovation agenda. Uganda, for example, identifies investments in STI as a key intervention area in its growth agenda. Kazakhstan intends to promote innovation through support for R&D investments and tertiary education. Bangladesh also prioritizes investment in science and technology in its sector strategies to improve productivity and efficiency.

Countries such as Armenia, Brazil, Colombia, Kazakhstan, Mexico, Mozambique, and Peru are requesting Bank Group support to strengthen entrepreneurial capabilities. In particular, IFC support is requested to foster technology upgrading through technology transfer and diffusion, South-South knowledge transfers, and access to new markets and products. Brazil requested IFC support for innovation and entrepreneurship by promoting South-South knowledge transfers and encouraging access to new markets and products. Other countries such as Colombia and Kazakhstan requested IFC's support in fostering entrepreneurship or developing innovative business models as part of their modernization agenda.

The Bank Group also seeks to enhance entrepreneurial capabilities by supporting knowledge flows, particularly in South-South knowledge transfers and setting up financing schemes and arrangements. For example, China is increasingly becoming an important source of knowledge and is leading innovative activities in key areas (Wessner 2007). Bank Group financing represents a relatively small share of China's investment and financing needs, but it plays a prominent role in bringing ideas, knowledge, and best practice experience to help the country improve firm and sector competitiveness. The Bank Group's role as an honest broker is also valued. Thus, China has been requesting Bank Group support for projects in innovation and knowledge transfer.

In more recent CASs, upper-middle-income Brazil and China have focused on emphasized inclusiveness and requested Bank support for promoting inclusive innovation that addresses the needs of the poor. This is another area where there are promising opportunities for South-South exchange, because these countries share challenges and growth opportunities. Efforts to strengthen entrepreneurial capabilities have also included support to financing schemes such as venture capital funds and grants, as in the Mexico Innovation for Competitiveness Project.

Fostering linkages between the actors in the national innovation systems has been the least emphasized area in CASs that cover innovation and entrepreneurship. About a third of the CASs that IEG has reviewed addresses this issue to some extent.

## Summary

Developing countries seeking to catch up and successful middle-income countries are seeking support from the World Bank Group to develop innovation strategies and policies that will strengthen their competitiveness, improve economic diversification, and stimulate growth. The Bank Group can help its clients build their innovation capacity so they can acquire, adapt, and use innovations that have been developed elsewhere. Experience from countries that have had successful innovation strategies may offer opportunities to help other countries pursue innovation-driven growth. Bank Group CASs reflect increasing demand for innovation projects across different income categories. However, current corporate and sector strategies do not provide adequate guidance on how to develop effective innovation interventions that can help client countries select, design, and implement policies and integrated programs to support innovation and entrepreneurship in a holistic manner. In fact, the World Bank Group does not have a comprehensive strategy or results framework for projects supporting innovation and entrepreneurship. Therefore, Bank Group interventions in this field have tended to be articulated around other thematic areas of interventions and not necessarily around innovation and entrepreneurship as a theme. This is partly because the agenda on innovation and entrepreneurship is still evolving.