

Chapter 5

# FINANCING REGIONAL INFRASTRUCTURE





# 5. Financing Regional Infrastructure

**A**sia's need for regional infrastructure is clear. Previous chapters have detailed how infrastructure networks are vital for promoting trade and investment, spreading the benefits of economic growth more widely, and improving human welfare. But without proper financing, the need for infrastructure will go unmet and the benefits will not be realized. Yet financing infrastructure projects is often challenging—and regional projects particularly so. However, Asia has vast savings that can be channeled into infrastructure investment for viable projects through an appropriate mechanism. This chapter maps out the challenges and how to overcome them.

The chapter first provides estimates of Asia's overall national infrastructure needs as well as the financing needs for regional projects that are under consideration and could become ready for investment between 2010 and 2020. It then considers the features of regional infrastructure projects that complicate their financing, preparation, implementation, and operation. Lessons from international experience with regional projects, with a particular focus on Europe, Latin America, and the GMS, are discussed. The chapter examines recent developments in Asian financial markets and the potential for deploying Asia's vast savings for infrastructure investment. It then explores options for funding regional projects through national and international financial markets, and it assesses whether creating new public sector funding mechanisms and/or institutions specifically geared towards financing regional infrastructure projects is desirable and feasible. The chapter concludes with some proposals and recommendations.

## 5.1. Financing Needs

Many institutions have published estimates of Asia's infrastructure needs, notably the UNESCAP (2006) and joint ADB-JBIC-World Bank (2005) studies. The present study provides new estimates of physical capacity needs during 2010 and 2020 for most developing Asian countries using a top-down approach.<sup>64</sup> The projection of infrastructure investment needs covers 30 of the 45 ADB DMCs in Asia and the Pacific for the period 2010–2020. These include: seven countries in Central Asia (Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyz Republic, Tajikistan, and Uzbekistan); 10 countries in East and Southeast Asia (Brunei Darussalam, Cambodia, PRC, Indonesia, Lao PDR, Malaysia, Mongolia, Philippines, Thailand, and Viet Nam); six countries in South Asia (Bangladesh, Bhutan, India, Nepal, Pakistan, and Sri Lanka); and seven countries in the Pacific (Fiji Islands, Kiribati, Papua New Guinea, Samoa, Timor-Leste, Tonga, and Vanuatu). Due to lack of reliable historic data, it was not possible to estimate the investment requirements for the other 15 Asian DMCs. This exercise covers the following major sectors: transport (airports, ports, railways, and roads); energy (electricity only); telecommunications (landlines and mobile phones); and water and sanitation.<sup>65</sup>

The forecasting exercise follows the methodology of Fay and Yepes (2003): a two-step procedure was used to develop the projections for each country. In the first step, econometric models that could be used across countries were developed to estimate new physical infrastructure capacity needs by sector for each year between 2010 and 2020. Demand for infrastructure stock in these models was derived from key determinants, namely income per capita, shares of agriculture and manufacturing in GDP, urbanization, and population density. In the second step, projected demand for infrastructure stock of new capacity was valued at best-practice unit costs. Investments required for maintaining and/or replacing current capacity at the end of its useful life were calculated by assuming that replacement investments would be around 2% of the investments required for new capacity for

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<sup>64</sup> For details, see ADBI (2009) and Bhattacharyay (2008).

<sup>65</sup> This study does not cover gas and petroleum, housing, urban transport, and rural roads.

transport and energy, 8% for telecommunications, and 3% for water and sanitation.

The estimates do not take into account any country strategic planning to invest in infrastructure ahead of demand or to meet development targets such as the Millennium Development Goals. These top-down order-of-magnitude estimates must be regarded as a reference point rather than a substitute for detailed bottom-up country and sector specific estimates that take into account actual conditions in each sector and country.

Between 2010 and 2020, Asia's overall national infrastructure investment needs are estimated to be \$8 trillion, 68% of which is for new capacity and 32% of which is for maintaining and replacing existing infrastructure (Table 5.1)—with an average infrastructure investment need of about \$730 billion per year. Electricity and roads account for 51% and 29% of the total, respectively. East Asia and the

**Table 5.1. Asia's Total Infrastructure Investment Needs by Sector, 2010–2020** (in 2008 \$ million)

Sector/Subsector	New Capacity	Replacement	Total
<b>Energy (Electricity)</b>	<b>3,176,437</b>	<b>912,202</b>	<b>4,088,639</b>
<b>Telecommunications</b>	<b>325,353</b>	<b>730,304</b>	<b>1,055,657</b>
Mobile phones	181,763	509,151	690,914
Landlines	143,590	221,153	364,743
<b>Transport</b>	<b>1,761,666</b>	<b>704,457</b>	<b>2,466,123</b>
Airports	6,533	4,728	11,260
Ports	50,275	25,416	75,691
Railways	2,692	35,947	38,639
Roads	1,702,166	638,366	2,340,532
<b>Water and Sanitation</b>	<b>155,493</b>	<b>225,797</b>	<b>381,290</b>
Sanitation	107,925	119,573	227,498
Water	47,568	106,224	153,792
<b>Total</b>	<b>5,418,949</b>	<b>2,572,760</b>	<b>7,991,709</b>

\$ = United States dollar.

Sources: ADBI (2009); Bhattacharyay (2008).

Pacific's needs total \$4,670 billion; South Asia's, \$2,870 billion; and Central Asia's, \$460 billion. A portion of the total amount will be used for financing regional infrastructure projects (see Box 1.1 for a broader definition of a regional project).

Furthermore, the study identifies 1,077 specific bilateral, subregional, and pan-Asian infrastructure projects that are in the pipeline<sup>66</sup> over the same period. Since no officially available list of all regional or subregional projects exists, a background paper for this study (Bhattacharyay 2008) compiled a consolidated list of the various proposals—some more advanced than others—for regional projects (as defined in Box 1.1) that are considered both economically viable and likely to be ready for implementation between 2010 and 2020. This list, which is included in the Appendix, is based primarily on information from ADB staff, but also takes into account proposals from other sources, including the websites of various subregional infrastructure programs, and UNESCAP. To the best of ADB and ADBI's knowledge, this is the first time that such a list has been compiled. In addition, the study has identified 95 projects for which data on financing needs are not available (Tables A5.12–A5.19 in the Appendix).

This was compiled from a variety of sources, some much more detailed and rigorous than others, and includes proposals at various stages of definition, preparation, review, and vetting. In most cases, ADB and ADBI do not have access to detailed feasibility reports and/or economic and financial evaluations for the projects; in some cases, these do not appear to have been carried out yet. In other cases, neither a definitive timetable nor managerial arrangements for implementation could be obtained.

In addition to the above overall national infrastructure needs, the total investment needed for these 1,077 regional projects is \$290 billion—with an average infrastructure investment need of close to \$30 billion per year (Table 5.2). Of the 1,077 projects, 989 projects in transport will cost \$200 billion (70%), and 88 in energy will cost \$80 billion (30%). Pan-Asian transport projects alone account for more

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<sup>66</sup> This includes planned and soon-to-be constructed projects.

**Table 5.2. Indicative Investment Needs for Regional Identified and Pipeline Infrastructure Projects, 2010–2020**

Region/Subregion	Transport Projects		Energy Projects		Total	
	Cost (\$ million)	No.	Cost (\$ million)	No.	Cost (\$ million)	No.
<b>Asia</b>	<b>177,077</b>	<b>931</b>	–	–	<b>177,077</b>	<b>931</b>
Asian Highway	43,276	121	–	–	43,276	121
Trans-Asian Railway	82,801	45	–	–	82,801	45
Asian Container Ports <sup>a</sup>	51,000	765	–	–	51,000	765
<b>East/Southeast-Central-South Asia<sup>b</sup></b>	–	–	<b>22,975</b>	<b>5</b>	<b>22,975</b>	<b>5</b>
<b>Southeast Asia<sup>c</sup></b>	<b>5,858</b>	<b>17</b>	<b>41,444</b>	<b>33</b>	<b>47,302</b>	<b>50</b>
GMS	5,858	17	2,604	14	8,462	31
Trans-ASEAN Gas Pipeline	–	–	7,000	1	7,000	1
BIMP-EAGA	–	–	100	1	100	1
Others	–	–	31,740	17	31,740	17
<b>Central Asia</b>	<b>21,414</b>	<b>38</b>	<b>11,131</b>	<b>44</b>	<b>32,545</b>	<b>82</b>
CAREC	21,414	38	10,861	43	32,275	81
Others	–	–	270	1	270	1
<b>South Asia</b>	<b>293</b>	<b>3</b>	<b>6,846</b>	<b>6</b>	<b>7,139</b>	<b>9</b>
<b>Total</b>	<b>204,642</b>	<b>989</b>	<b>82,369</b>	<b>88</b>	<b>287,038</b>	<b>1,077</b>

\$ = United States dollar; ASEAN = Association of Southeast Asian Nations; BIMP-EAGA = Brunei Indonesia Malaysia Philippines-East ASEAN Growth Area; CAREC = Central Asia Regional Economic Cooperation; GMS = Greater Mekong Subregion; UNESCAP = United Nations Economic and Social Commission for Asia and the Pacific.

– data not available.

Notes:

<sup>a</sup> Dry and sea ports, container depots (UNESCAP, 2007b: 79–82).

<sup>b</sup> Projects involving countries belonging to more than one subregion.

<sup>c</sup> Some projects involve countries in East Asia, such as the People's Republic of China and Mongolia.

Sources: Bhattacharyay (2008) and adapted from UNESCAP (2006a, 2007a, 2007b, 2008a, 2008b); ADB (2008a, 2008d, 2008i); CAREC (2008a, 2008b, 2008c); ASEAN (2004); Bhattacharya and Kojima (2008); China Post (2007); Kathuria (2006); ADB staff estimates (2008); ASEAN Center for Energy (2005); and Von Hippel (2001).

than 60% of the total. Energy projects in Southeast and Central Asia account for more than 60% of the total energy investment needs. This amounts to an overall infrastructure investment need of \$8,280 billion (national and regional) and about \$750 billion per year during this period (Bhattacharyay 2008).

Experience elsewhere suggests that the actual investment in regional projects is usually a small fraction of total infrastructure investment. Even in the EU, which is highly integrated and offers ample financing at very attractive terms, regional projects have accounted for only a small portion of total infrastructure investments. This proportion is smaller in Latin America, where only a small fraction of regional projects proposed by governments have been formally realized.

It seems unlikely that many large pan-Asian regional projects will come to fruition by 2020 as long as there remains no appropriate pan-Asian institutional forum supported by regional governments. Political support for pan-Asian initiatives remains weak, and there is no adequate source of concessional financing for less developed participating countries. Subregional “bankable”<sup>67</sup> projects under existing subregional initiatives such as GMS programs, are more feasible even though adequate financing for subregional programs remains elusive.

Furthermore, this study has identified 21 high priority projects that could be implemented by 2015 in East, South, and Central Asia that are regional in nature. These projects are well advanced in terms of definition and approvals necessary; clearly deserving of high priority; and considered politically, technically, economically, and financially viable in principle (Table 5.3). These could be designated as “flagship” projects whose successful financing and implementation would create positive precedents and open the way for progress on a much larger number of regional projects further strengthening regional infrastructure networks (Bhattacharyay 2008). Their estimated total cost is \$15 billion. Details of these projects are available in Tables A5.9–A5.11 in the Appendix.

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<sup>67</sup> A bankable project is one that has sufficient collateral, future cash flow, and a high probability of success so that it is acceptable to institutional lenders for financing (<http://www.businessdictionary.com/definition/bankable.html>).

**Table 5.3. Twenty-One High Priority “Flagship” Regional Projects**

Subregion	Transport	Investment (\$ million)	Energy	Investment (\$ million)	Total Projects (No.)	Total Investment (\$ million)
<b>GMS</b>	<b>5 projects (total)</b>	<b>3,324</b>	<b>5 projects (total)</b>	<b>1,414</b>	<b>10</b>	<b>4,738</b>
	GMS Kunming-Hai Phong Transport Corridor-Noi Bai-Lao Cao Highway	1,216	GMS Northern Power Transmission	54		
	2nd GMS Northern Transport Network Improvement	135	GMS Nabong-Udon Thani Power Transmission and Interconnection	110		
	Rehabilitation of the Railway in Cambodia	73	Lao PDR-Viet Nam Power Interconnection (Ban Sok-Pleiku)	270		
	Ha Long-Mong Cai Expressway	1,000	GMS Nam Ngiep 1 Hydropower Project	380		
	GMS Hanoi-Lang Son Expressway	900	GMS Nam Ngum 3 Hydropower Project	600		
<b>CAREC</b>	<b>4 projects (total)</b>	<b>9,043</b>	<b>2 projects (total)</b>	<b>1,072</b>	<b>6</b>	<b>10,115</b>
	CAREC Corridor 1b	6,700	Central Asia-South Asia Regional Electricity Market (CASAREM)	962		
	Caucasus Corridor: Armenia-Georgia Regional Transport Project	323	Regional Power Transmission Interconnection Project	110		
	CAREC Corridor 2	1,800				
	Western Regional Road Corridor Development Project-Mongolia	220				
<b>SASEC</b>	<b>3 projects (total)</b>	<b>293</b>	<b>2 projects (total)</b>	<b>279</b>	<b>5</b>	<b>572</b>
	SASEC Information Highway Project (Bangladesh, Bhutan, India and Nepal)	24	Green Power Development (Bhutan)	234		
	Subregional Transport Logistics and Trade Facilitation Projects (Bangladesh, Bhutan, India and Nepal)	179	West Seti Hydroelectric Project (Nepal)	45		
	Improving Connectivity and Destination Infrastructure for Sub-regional Tourism Development (Bangladesh, Bhutan, India, Nepal and Sri Lanka)	90				
<b>Total</b>	<b>12 projects (total)</b>	<b>12,660</b>	<b>9 projects (total)</b>	<b>2,764</b>	<b>21</b>	<b>15,424</b>

\$ = United States dollar; CAREC = Central Asia Regional Economic Cooperation; GMS = Greater Mekong Subregion; Lao PDR = Lao People's Democratic Republic; SASEC = South Asia Subregional Economic Cooperation.

Source: ADB staff and Bhattacharyay (2008).

## 5.2. Challenges in Financing Regional Infrastructure

Financing infrastructure projects is challenging for many reasons. Investments are relatively large and lumpy, their implementation period is long and they create assets that yield financial returns over an even longer period, they involve sovereign risks that create uncertainties about future costs and revenue streams, and many of their economic benefits cannot be captured as financial revenues. Most infrastructure projects are therefore developed and financed by governments. And while an increasing proportion of projects involve PPPs, these still require—with the exception of telecommunications projects—some form of government guarantee.

Additional complexities are involved in the development, approval, preparation, evaluation, implementation, management, operation, and maintenance of regional projects that make their financing even more challenging. By definition, they require the support of—and coordination between—two or more sovereign countries. Domestic politics complicates matters further. Key stakeholders may be reluctant to support “foreign” projects, and powerful interest groups may oppose them for protectionist or other reasons. Broader regional projects are particularly complex, and reaching agreement among a larger number of governments often requires a neutral conciliator.

Regional projects that involve building infrastructure in less developed or sparsely populated border areas are particularly problematic. For instance, a cross-border road may initially be used less intensively than one in a country’s economic heartland, making it harder to justify diverting funds from wholly national investments. That is one reason why most regional projects in the EU have required grant or concessional financing.

Financing becomes more complicated when the costs and benefits of a regional project are unevenly distributed. One reason for the lack of progress in building a road link between Bangladesh and Nepal through India, for instance, is apparently that India believes that it would bear most of the costs but derive few of the benefits. India

might view the project more favorably if concessional financing were available. Consider, also, that to secure financing for a power plant that would mainly export its electricity, the parties involved need to agree on their respective shares of costs and benefits, or else bring in a neutral third party and/or an external source of concessional financing. For example, many years of technical work by ADB and the World Bank—and the promise of considerable concessional financing—were needed to help prepare, assess, and negotiate the Nam Theung power project in the Lao PDR.

Regional projects also usually involve additional project management, commercial, and sovereign risks that lengthen their preparation and complicate the negotiation of their financing. That is one reason why very few regional projects in the EU have involved PPPs and why only a fraction of those proposed in Latin America have reached the implementation stage. Experience in the EU and Latin America shows that strong political support from national leaders and a perceived shared interest in their development are therefore essential. The involvement of a technically competent, neutral third party and the availability of considerable concessional financing are also often crucial.

Four examples—two from Europe and two from Asia—in Boxes 5.1–5.4 illustrate the challenges and best practices of developing cross-border projects and the complexities of structuring PPPs while also coordinating the activities of two or more sovereign countries. They also highlight that each project requires tailor-made management, financing, and risk mitigation arrangements.

**Box 5.1. Theun Hinboun Hydropower Project, the Lao PDR**

The 210 megawatt Theun Hinboun project was the first PPP to build, own, operate, and transfer a hydropower plant in the Lao PDR. It was built between 1994 and 1998 at a cost of \$240.3 million. It was also the first project implemented under an MOU between the Lao PDR and Thailand to develop 1,500 megawatts of power for export by 2000.

The overall project cost, including both foreign exchange and local currencies, was estimated at loan appraisal at \$270 million equivalent. The actual cost was about \$240 million, resulting in savings of about \$30 million. The most important saving of about \$23 million was due to substantially lower than estimated tender prices for the main civil works and hydraulic steelworks.

The Lao PDR government entered into a joint venture with a private company to form the Theun Hinboun Power Company (THPC) to develop, implement, and maintain the project. THPC was given 30-year operating rights under a long-term contract with the Electricity Generating Authority of Thailand (EGAT). The Lao PDR is represented in the project by Electricité du Laos (EdL), the private sector by MDX Lao Public Company (90% owned by GMS Power Public Company and 10% by Crown Property Bureau, Thailand) and Nordic Hydropower AB (owned equally by Statkraft AS of Norway and Vattenfall AB of Sweden).

Equity funding (\$110 million) was raised by the government of the Lao PDR through EdL (\$66 million), MDX (\$22 million), and Nordic Hydropower AB (\$22 million). Debt funding (\$130 million) was provided by the government of the Lao PDR (\$7 million), commercial banks (\$65 million), and export credit (\$59 million). The Lao PDR government's contribution toward equity and debt came from grants by the Norwegian Agency for Development Cooperation (\$7 million) and the United Nations Development Programme (\$0.4 million), as well as from loans by ADB (\$58 million) and the Nordic Development Fund (\$7 million).

The license agreement provides exclusive rights and tax and royalty obligations for THPC. THPC is also protected against any detrimental water diversions, except for implementation of the Nam Theun 2 project. In return, THPC pays a royalty of 5% of gross revenues to the Lao PDR government. THPC enjoyed a five-year tax holiday after the start of commercial operations, but now it pays 15% tax. The government is responsible for environmental and social mitigation, with limited funding by THPC.

The Power Purchase Agreement (PPA) was executed between EdL and EGAT in June 1996 and is valid for 25 years from the start of commercial operation. The PPA provides for an option to renegotiate the power tariff after 10 years and is based on the take-or-pay principle under which EGAT undertakes to purchase 95% of the project's available energy output. The tariff is denominated in US dollars, of which 50% is payable in dollars and 50% in Thai baht at the exchange rate on the execution date of the PPA. In the first year of operation, the tariff was negotiated at US\$0.0484 per kWh; thereafter it would increase at the fixed rate of 1% per annum.

The project is highly profitable, and THPC maintains a comfortable debt-servicing capacity. Its revenues increased from \$42 million in 1998 to \$57 million in 2005, and are expected to be around \$55 million a year in the future. The project generated a net income of \$88 million between 2003 and 2005. THPC's dividend payments in 2003–2005 totalled \$78 million, of which \$47 million went to EdL. THPC also paid around \$2.8 million in royalties to the government in 2005.

To attract private investment, project risks were mitigated in a number of ways. The Lao PDR government committed to meet its obligations under the 30-year build, own, operate, and transfer license, while ADB waived its usual negative pledge covenant. Shareholders gave lenders a completion guarantee, and an offshore escrow account was set up and pledged to the lenders. Funds are distributed first to meet THPC's operation and maintenance costs, then to service interest payments, followed by royalties to the government, and finally dividends to shareholders.

The project has boosted the Lao PDR's economy through increased export revenues and the electrification of surrounding rural areas. Many jobs were also created, enhancing the skills of workers associated with the project. Modern education and medical services have improved living conditions. The revenues from the project allow EdL to subsidize electricity tariffs for the poor and to support other power projects. However, the diversion of water flows from the Nam Hai-Nam Hinboun system caused substantial social and environmental damage until this was mitigated with support from ADB.

Overall, the project has proved successful in terms of its financing arrangements, implementation, and the coordination among all parties concerned. This could be considered a good model for financing cross-border hydropower projects.

Source: De et al. (2008).

### **Box 5.2. Malaysia-Singapore Second Link: Railway**

**T**he second border crossing bridge (also known as the “Second Crossing” or “Linkedua”) between Malaysia and Singapore was built to reduce traffic congestion at the first crossing, the Johor-Singapore Causeway.

The project was implemented on a build-operate-transfer basis, through a concession agreement signed in July 1993 with United Engineers Malaysia Berhad (UEM). The agreement gave exclusive rights and authority to UEM to design, construct, manage, operate, and maintain the bridge and expressways for 30 years. In May 1994, through an agreement, UEM assigned all of its rights, liabilities, and obligations to Linkedua Malaysia Berhad (LINK), a wholly owned subsidiary of UEM.

The 1.92 km long twin-deck bridge accommodates a two-way, six lane road. The bridge, designed to cater to about 0.2 million vehicles a day, was opened to traffic on 18 April 1998.

An Inter-Governmental Agreement (IGA) that defined each government’s responsibilities for the design, construction, operation, and maintenance of the bridge was signed in March 1994. Further, in September 1994, a Supplemental Concession Agreement was signed to take into account the IGA between the governments of Malaysia and Singapore. This agreement ensured that LINK’s obligation to implement the project and its rights under the concessional agreement were consistent with the Malaysian government’s obligations under the IGA. A joint committee comprising representatives of each government was formed to oversee the project’s implementation. The award was valued at 1.6 billion ringgit plus a 600 million Singapore dollar component from Singaporean investors.

Project sponsors on the Malaysian side include the Malaysian Highway Authority, the government of Malaysia, Malaysia PLUS Expressway Berhad, and LINK. Sponsors on the Singapore side are the Land Transport Authority and the government of Singapore. The project is maintained by Malaysia PLUS Expressway Berhad and LINK on the Malaysian side, and by the Land Transport Authority on the Singapore side.

Projects of such magnitude require large cash flows in their initial years of operation, followed by sustained revenue flows to meet project expenses and to service debts. To make the project attractive, the concessionaire (UEM) was accorded rights for developing a new township in Johor, called Prolink 2020. This

was jointly developed by the project company based on a cost-sharing arrangement with Prolink Development, also owned by UEM.

The link provides safe and congestion-free travel, with quick customs and immigration clearances. Financially, however, the project has not been successful. Since its opening, revenues have proved much lower than expected due to low traffic volume (in 1998 this was one third of the original estimate). The project company (LINK) has therefore had great difficulty servicing its debts. Information in the public domain reveals that cumulative revenue of the concessionaires in 2007 was 27.6 billion ringgit, while the total cumulative net profit was 3.5 billion ringgit. In order to ensure financial returns to the project developers, the government has been planning to pay compensation to toll concessionaires in the form of prolonged concessions. The interventions by the governments can be seen as positive steps in building the confidence of the private sector and ensuring that the private sector remains engaged in the development of regional infrastructure facilities in the long run.

Source: De et al. (2008).

### **Box 5.3. Perpignan–Figueiras Rail Concession**

**T**his cross-border rail link between France and Spain, although not yet completed, is a good example of a successful PPP with very complex institutional challenges. An EU grant and subsidies from domestic governments will cover 57% of the construction costs. The remaining funds have to be offered by the private partners in the form of own equity and commercial loans.

The private parties will levy fixed and publicly approved tolls from train operators. The standards of maintenance and performance obligations are set very high, with penalties for nonperformance, including termination of the contract. This is seen as a flagship model of how to set up a PPP for a highly complex cross-border infrastructure project. Subsidies allow the private sector to take on demand and availability risks rather than the total cost of the project.

Source: van der Geest and Nunez-Ferrer (2008a).

**Box 5.4. Channel Tunnel Rail Link**

The Channel Tunnel rail link connecting the United Kingdom (UK) to France is a prime example of a highly complex and very costly cross-border project. It highlights the challenges of putting together and executing such projects. After the first part was completed in 1993, passenger numbers were less than half those expected, not least because the projections had failed to allow for the emergence of low-cost airlines. It was soon clear that London and Continental Railways (LCR), the private consortium that developed the project, would not be able to recover its investment. But the British government could not provide state aid. Finally, a complex refinancing agreement was agreed upon. This involved LCR completing the project and selling it to Railtrack, the newly privatized UK rail company. The UK government provided loan guarantees to LCR so that it could finance the design and construction work. Unfortunately, Railtrack, too, experienced hard times and had to be taken into public ownership.

While the rail link was completed seven years late at a cost of 5 billion pound sterling, the private engineering and building companies managed to deliver their part of the project on time and on budget. But the project was hampered by low passenger use, a failure to connect the rail link to the rest of the UK network, and a long delay in upgrading the line within the UK. Eurostar trains ran at 300 kilometers per hour (km/h) in France but then had to slow down to 140 km/h in the UK. Since 2008, the trains can finally run at 270 km/h in the UK. Shorter travel times, combined with the increasing inconvenience of flying, not least due to prolonged security controls at UK airports, have recently increased the demand for Eurostar services. Even so, only 10 million passengers a year are expected in 2010, compared with the original forecast of 21 million. While the project has not been financially successful, it has brought Britain closer to the rest of Europe and is seen as a historic feat of engineering on both sides of the Channel.

Source: van der Geest and Nunez-Ferrer (2008b).

### 5.3. International Experience

This section discusses international experience in financing regional infrastructure projects—particularly those involving PPPs in Europe and Latin America—as well as experience within Asia, notably in the GMS. The financial instruments used for regional infrastructure development in Europe, Latin America, and Asia and their experience to date reflect their differing economic and political realities.

The EU is the world’s most integrated region, both economically and politically, and is often seen as a model for economic cooperation and integration in other regions. Its advanced economies are home to a thriving private sector and sophisticated financial markets, supported by well-developed regional (supranational) institutions (such as the EC and the EIB) that have considerable statutory authority, highly skilled staff, and significant financial resources.

The EU has the strongest policy and institutional framework, as well as an extensive system of financial support for regional initiatives. European countries have also been leaders in using PPPs. The EU has two major financial channels to support regional infrastructure projects with PPPs: programs managed by the EU itself, and those of EIB. Regional infrastructure projects consist mainly of connecting existing high-standard national transport, energy, and telecommunications facilities and networks and upgrading existing individual country segments to European standards so as to reduce the time and cost of—and stimulate further—already large movements of people, goods, and services across national borders.

Latin America is the least integrated of the three regions. External trade is a much lower share of GDP, consists principally of commodities, and is mostly with countries outside the region. The region is middle income—and thus much richer than Asia—but its growth is generally much lower. Efforts to develop regional infrastructure are driven more by political desire than by economic imperatives. Culturally, political leaders are comfortable with the creation of high-profile initiatives and formal supranational institutions, but their follow-up has been limited.

Latin America has created two formal programs and supporting institutional frameworks for regional projects: IIRSA, which encompasses 12 countries; and the PLPP, which aims to link seven countries in Central America with Mexico. Cascading sets of committees exist, with summits of heads of state providing political leadership. No institutions are specifically responsible for financing regional projects; rather, three existing regional institutions—CAF, FONPLATA, and IDB—provide expertise and help mobilize financing for the ventures. Latin American efforts have focused on 10 regional transport, energy, and telecommunications “axes,” which were noted in Chapter 4.

Asia comprises several distinct subregions that differ in geography, politics, level of development, resource endowment, and economic growth rate, as well as in the importance and direction of external trade. Whereas intraregional trade approaches EU proportions in East Asia, it is very low in South Asia, where the political will to enhance regional cooperation and integration is also lowest. Trade among the sparsely populated Central Asian countries, which have historically traded with the Russia Federation rather than with each other, remains low and consists mainly of energy. In contrast to Europe, regional integration in East Asia has been led by the private sector; formal agreements among governments are relatively underdeveloped.

Asia does not possess a formal pan-Asian forum to lead and guide regional infrastructure development. So far, such activities have been discussed either bilaterally or subregionally. The GMS has made the most progress, with periodic summits of heads of state providing active leadership. ADB has played a crucial role in facilitating all aspects of regional cooperation in the GMS, not least in identifying, developing, and financing regional projects. ASEAN possesses a small secretariat and also relies informally on ADB for technical expertise and financial resources. In Central Asia, a formal institutional framework has been created with ADB’s help, but CAREC is still in its infancy. Countries rely on multilateral institutions, notably ADB, to finance projects. In South Asia, SASEC’s achievements have been negligible, perhaps reflecting long-standing political tensions within the subcontinent and countries’ preference for developing closer ties with those outside the subregion.

Multilateral financial institutions play a crucial role in financing regional infrastructure projects in Europe, Latin America, and Asia. Some have a broader focus than others (Table 5.4). Regional development banks such as IDB and ADB now place greater emphasis on regional infrastructure projects than previously.

**Table 5.4. Characteristics of Major Regional and National Financial Institutions**

Institution	Year Established	Member Countries	Major Focus	Operational Region	Financing <sup>a</sup> (\$ billion)
<b>Latin America</b>					
Corporación Andina de Fomento (CAF)	1970	17	Regional infrastructure projects (transport, energy, and telecommunications)	South America, mainly Andean region	18.4 [1970–2008]
Inter-American Development Bank (IDB)	1959	48	Poverty reduction, energy and climate change, regional infrastructure (water and sanitation, education and innovation), regional integration	Latin America and Caribbean	156.0 [1961–2007]
<b>Asia</b>					
Asian Development Bank (ADB)	1966	67	Infrastructure, environment, regional cooperation and integration, financial sector development, education	Asia	91.1 [1966–2007]
Japan Bank for International Cooperation (JBIC) <sup>b</sup>	1995	Japan	Energy and natural resources, environment and climate change, international business development, international finance, knowledge assistance	World	256.3 [1995–2007]
<b>Europe</b>					
European Investment Bank (EIB)	1958	27	Private sector development, regional infrastructure development, security of energy supply, environmental sustainability	Europe	258.7 [2003–2007]
Nordic Investment Bank (NIB)	1976	8	Infrastructure (energy and transport), research and development, improvement of manufacturing processes, internationalization of businesses and investments by small and medium enterprises, and environment.	Nordic and Baltic countries and emerging markets	11.8 [2003–2007]

\$ = United States dollar.

Notes:

<sup>a</sup> Cumulative sanctioned loans and guarantees during the period shown in the column.

<sup>b</sup> The overseas economic cooperation operations of JBIC were succeeded by the new JICA on 1 October 2008.

Sources: Bhattacharyay (2008) and adapted from IDB (2007), ADB (2007a), JBIC (2000, 2005, 2008), EIB (2007), and NIB (2007).

Very few examples of successful cross-border infrastructure projects with PPPs exist, as the examples in Boxes 5.1 and 5.3 highlight. Even though the EU has dedicated special financing windows for PPPs, these have been scarcely used. The few regional projects that have successfully involved PPPs have obtained private financing from capital markets rather than submit to EU rules and procurement procedures.

Most privately funded projects in Europe have been funded through project-finance vehicles. The EU has well-developed financial markets with several financing instruments, an advanced legal and regulatory framework, and relatively stable currency markets. However, for financing regional projects, the specific financial instruments, techniques, and risk-mitigation arrangements were all tailored to the specific needs of the various project sponsors and funders, the nature of the revenue streams, the sovereign countries where the project was based, and the market appetite at the time of financial closure. While cross-border projects tend to take a very long time to prepare, negotiate, finance, and implement, those financed through project-finance techniques take even longer.

## Lessons for the Future

Past experience shows that only a few of the long list of projects proposed by individual countries and parties reach the final financing and implementation stage. During the process of vetting and professional appraisal, many are dropped for a variety of reasons, including unrealistic demand and cost assumptions, poor technical design, inability to realize adequate financial returns, lack of project sponsors, and inadequate financing.

The following lessons can be drawn from previous experience with regional infrastructure projects in Europe, Latin America, and Asia:

- Developing and financing cross-border projects is a slow and complicated process, even in the EU.
- Political leadership at the highest level is necessary but not sufficient, as Latin America demonstrates.

- Regional projects are usually a low priority for national policymakers responsible for allocating budgets and requesting assistance from multilateral institutions. Also, they often involve constructing infrastructure segments in parts of a country with little economic activity and few advocacy groups. Concessionary financing from external sources is therefore usually necessary to make a project more economically and financially attractive.
- Public sector funding alone will not be sufficient to eliminate infrastructure gaps for regional infrastructure projects.
- Attracting private participation in regional projects is particularly difficult because of the additional risks and uncertainties involved. Despite the ongoing turmoil in global financial markets, many regional projects in Asia can involve PPPs if attractive, sound, and bankable projects are created. The private sector will have to play a big role in the future when the significant challenges involved can be overcome.
- To attract large- and medium-sized private investors, Asian countries must establish effective institutional mechanisms, both nationally and regionally, as discussed in Chapter 4.
- A neutral and respected multilateral agency is very helpful, if not essential, to provide a dispassionate and professional assessment of projects' merits and the best way to structure them fairly. For example, ADB has been vital to the success of regional cooperation in the GMS. The Theun Hinboun and Nam Theun 2 hydropower projects were able to attract private investment thanks to sustained support (i.e., funding, political and risk guarantees, and support in implementing environmental and social rehabilitation and mitigation measures) from aid agencies such as ADB and the World Bank.

## 5.4. Development of Asian Financial Markets

The availability of private finance for commercially and financially viable infrastructure projects—be they national or regional—depends on how developed and stable Asia’s financial markets are and their effectiveness in intermediating the region’s vast domestic savings. This section therefore considers the state of Asian financial markets and their future development.

Most Asian countries’ financial systems have made impressive progress since the 1997–1998 crisis. But while they are deeper and more robust, they are still relatively underdeveloped. The recent global financial turmoil has highlighted that Asia’s financial systems are now intimately intertwined with global ones, and that even healthy national balance sheets—high domestic savings, low foreign debt, and large foreign reserves—cannot insulate Asia from problems elsewhere.

After the 1997–1998 crisis, authorities in the region focused on restructuring the banking sector and, to a lesser extent, on building capital markets. Nearly all countries have made considerable progress in reforming their banking systems; the incidence of nonperforming assets has dropped, and the return on assets has risen. Supervisory and regulatory regimes have been strengthened, and internal governance has been improved. Many countries have allowed foreign banks to open branches, increasing competition and stimulating innovation. But much remains to be done. Banking systems remain vulnerable due to the vagaries of global financial markets and the weaknesses of domestic institutions and regulations.

Capital markets have developed differently. One group of economies with more sophisticated markets—Hong Kong, China; Republic of Korea; Malaysia; and Singapore—has been quite successful at reforming and deepening domestic bond markets and, to a lesser extent, at bolstering their equity markets. In Central Asia, Kazakhstan’s financial system is also relatively well developed. But in the rest of Asia, capital markets have developed more slowly, and financial systems remain largely bank dominated, as Table 5.5 shows. Three main

**Table 5.5. Structure of Financial Systems in Selected Asian Economies** (percent of GDP)

Economy	Bank Deposits		Equity Market		Bond Market		Insurance Premiums		Total Financial Assets	
	1990	2006	1990	2006	1990	2005	1990	2005	1990	2005/2006
PRC	75.6 *	177.8	2.4 *	60.4	5.9	34.1	0.8	2.7	84.7	275.0
India	31.4	53.2	10.4	76.2	19.8	33.0	1.5	3.2	63.1	165.6
Indonesia	30.0	34.7	4.5	30.4	0.1 *	20.3	0.9	1.5	35.4	87.0
Korea, Rep. of	32.6	66.1	48.2	88.2	44.3	102.0	11.0	10.5	136.1	266.8
Malaysia	80.6	115.9	100.7	141.0	69.9	90.5	3.0	5.6	254.2	352.9
Pakistan	23.6	34.0	6.7	35.8	29.0 *	29.7	0.8	0.7	60.0	100.2
Philippines	24.7	46.7	20.6	46.7	25.8 *	38.9	2.0	1.5	73.1	133.8
Thailand	62.9	93.9	29.2	64.3	9.8	41.3	1.7	3.6	103.6	203.1
Hong Kong, China	205.6 *	251.5	105.2	527.9 *	1.5	27.7	3.0 *	9.9	315.3	817.1
Japan	177.3	190.4	122.6	93.2 *	86.4	191.5	8.5	10.6	394.7	485.6
Singapore	74.3	107.5	95.9	163.5 *	27.7	57.8	3.0	8.8	201.0	337.6
Taipei,China	–	–	104.6	134.8 *	16.6	55.9	–	14.2	121.2	204.8

– data not available.

CEIC = China Economic Information Center; GDP = gross domestic product; PRC = People's Republic of China.

Note: \* PRC and Hong Kong, China 1990 bank deposit data from CEIC. Viet Nam 2006 bank deposit data for 2005. PRC 1990 equity market data for 1992. Hong Kong, China; Japan; Singapore; and Taipei,China 2006 equity market data from 2005. Pakistan and Philippines 1990 bond market data do not include private bonds. Indonesia 1990 bond market data for 1991. Hong Kong, China 1990 insurance premium data from CEIC is for 1991.

Source: Financial Structure Database, CEIC.

factors have hindered progress: fiscal deficits in many countries, an inability to reform and restructure contractual savings institutions,<sup>68</sup> and a reluctance to allow foreign financial intermediaries to help build these markets.

Capital markets in the region also have a narrow investor base. This reduces liquidity and impedes domestic savings and investments from flowing through them. Although investor diversity is broadening in some markets, notably in emerging East Asia, greater issuance of financial instruments such as bonds and equities will not automatically

<sup>68</sup> Contractual savings institutions include national provident funds, life insurance companies, private pension funds, and funded social pension insurance systems (Vittas and Skully 1991).

translate into higher liquidity, especially as the nonbank investor base remains homogenous; focused on buy-to-hold strategies; and dominated by government-controlled provident funds, insurance companies, and banks. Measures to support the participation of more provident schemes, pension funds, and insurers would help in diversifying and expanding the investor base, as would the reduction of national and cross-border financial transaction barriers.

By sustaining current account surpluses and accumulating foreign currency reserves, Asian countries have strengthened their balance sheets and made their economies more resilient to external shocks. But the buildup of reserves also reflects the inability of the region's financial system to intermediate the surplus funds effectively. Savers have instead channeled their surpluses through US and European financial centers, from which their funds have often been reinvested in Asia. Thus, Asia has become both a major exporter of capital and the world's largest recipient of private capital inflows.

If Asia's financial markets and institutions were more developed, a large part of the region's savings could be directly channeled into productive investments—including regional infrastructure—within Asia, while also perhaps offering higher returns to savers. Asia therefore needs to redouble its efforts to develop national and regional capital markets—especially bond markets.

## Regional Integration of Financial Markets

Since 1997, Asian leaders and policymakers have placed more emphasis on regional financial integration and cooperation. Several important initiatives have been launched, notably the Chiang Mai Initiative, the Asian Bond Markets Initiative (ABMI), and the Asian Bond Funds (ABF). Despite these worthwhile initiatives, the region remains much less integrated financially than it is in trade and investment (Kawai 2005). Most Asian financial markets are more closely integrated with international ones, particularly in the US and Europe, than they are with neighboring ones.

Greater regional financial integration is an essential part of closer regional cooperation—and vital for funding Asia’s vast infrastructure needs. It would create deeper and broader financial markets that would enable Asian investors to invest in other markets in the region more effectively, and channel funds from economies with surplus savings to those short of capital. With a greater knowledge of the risks and rewards associated with investment opportunities in the region, local markets may be more efficient in allocating resources than outsiders. Regionwide initiatives to implement global financial standards and to strengthen regulation and oversight could also spur competition and reforms in domestic markets.

Many obstacles remain. For a start, the domestic financial markets that will act as building blocks for larger regional markets need to be developed and liberalized. In particular, the contractual savings institutions—the pension and provident funds, social security institutions, and insurance companies that hold most of the long-term savings that are the bedrock of bond and equity markets—need to be liberalized. National authorities also need to harmonize their domestic laws, regulations, financial standards, and access rules for foreign financial institutions and products. A desire to protect domestic players seems to override efforts to foster competition and create regional markets. Jurisdictional rivalries and competition among the numerous public institutions responsible for the financial system have also delayed progress. Last but not least, closer regional collaboration is needed to develop appropriate financial infrastructure needed to support regional capital markets.

In the longer term, Asia requires a regional financial system that matches the strength, global competitiveness, and agility of its productive sector. Such a system should be capable of mobilizing and channeling, within the region itself, a much larger share of its twin surpluses of domestic savings and foreign exchange reserves in a manner that helps meet the region’s need for higher investment, particularly in infrastructure projects; raises returns; and reduces risks to savers.

The ultimate impact of the post-2007 global financial crisis and ensuing economic downturn is still unclear. For now, there has been a sharp fall in global capital flows. As international investors become much more risk averse, they are reducing their exposure to emerging markets. Given the perceived higher risks associated with long-term investments in cross-border infrastructure projects in emerging markets, prospects for attracting private financing appear slim for now. Asia will therefore have to rely much more on domestic financial markets and support from multilateral institutions to supplement public funding for infrastructure investment.

## 5.5. Financing Options

This section reviews the need, rationale, and practical feasibility of creating new public sector funding mechanisms and/or institutions, as well as financial instruments using Asia's domestic savings and foreign exchange reserves for financing national and regional projects—including those involving PPPs.

### Asia's Twin Surpluses

It is often argued that Asia's massive—national and regional—infrastructure needs could easily be financed by the region's large domestic savings and huge foreign exchange reserves (see Table 5.6). But the reality is far more complicated.

On the demand side, countries are understandably reluctant to finance infrastructure investment through foreign borrowing. In Asian (and most other) developing countries, domestic investment is financed overwhelmingly through domestic savings. In most Asian economies—with the notable exceptions of least developed countries such as Nepal, and countries rebuilding from a war such as Afghanistan—over 90% of domestic investment is financed from domestic financial markets or through government budgets funded by local taxes. Foreign capital flows—FDI, portfolio flows, and bank debt—account for a modest (if not marginal) share of total financing, while international development

**Table 5.6. Asia's Gross Domestic Savings and Foreign Exchange Reserves, 2007** (\$ billion)

Country/Region	GDP	Gross Domestic Savings	Foreign Exchange Reserves
China, People's Rep. of	3,239	1,384	1,434
Japan	4,403	1,311	923
East Asia-5	9,173	3,207	3,034
ASEAN-5	1,091	457	409
India	1,085	329	267
Asia-11	11,349	3,992	3,710

\$ = United States dollar; ASEAN = Association of Southeast Asian Nations; GDP = gross domestic product.

Notes: East Asia-5 includes: Hong Kong, China; Japan; People's Republic of China; Republic of Korea; and Taipei, China. ASEAN-5 includes: Indonesia, Malaysia, Philippines, Singapore, and Thailand. Asia-11 includes: East Asia-5, ASEAN-5, and India.

Sources: Bhattacharyay (2009a), based on Key Indicators 2007 ([www.adb.org/statistics](http://www.adb.org/statistics)); Asian Development Outlook 2008 (ADB 2008k), International Monetary Fund International Financial Statistics, and World Bank's World Development Indicators CD-ROM 2008.

assistance is small, except in least developed countries, small island economies, and postconflict countries.

Since the financial crisis in 1997–1998, Asian countries have been wary of incurring large commercial debts in foreign currencies to invest in assets that will generate revenues in local currency. Governments are usually reluctant, therefore, to increase their reliance on foreign capital significantly to finance the needed jump in infrastructure spending. They are instead trying to supplement investment budgets by tapping domestic savings, through PPPs as well as by allowing state-owned infrastructure companies to raise debt and equity from domestic markets. Since governments avoid foreign financing for domestic infrastructure, they are highly unlikely to provide guarantees on foreign debt to finance regional projects.

On the supply side, most of Asia's domestic savings are not at the disposal of the region's governments. Asia's domestic savings are held mainly by private individuals and businesses, whose main investment criteria are financial returns and risk management. Mostly invested through (domestic) financial markets, these can be tapped only by offering market-beating returns. The only domestic savings

that governments control are those generated by budget surpluses and the surplus cash flows of public sector enterprises and banks. There are many competing claims on these resources domestically, so governments are unlikely to use them to finance investments abroad (other than bilateral aid and export promotion schemes).

Several Asian countries, notably PRC, India, Japan, and Republic of Korea, have also accumulated huge foreign exchange reserves. These are usually held by central banks, which are legally required to invest them in a way that preserves capital, maintains liquidity, and involves minimal risk. Most reserves are therefore invested in “risk-free” US and European government securities. Central banks are highly unlikely to be willing, or able, to invest even part of these reserves in infrastructure in other Asian countries.

More recently, as many Asian countries’ foreign currency reserves have come to greatly exceed central banks’ needs for maintaining exchange rate and financial stability, part of them has been channeled into sovereign wealth funds (SWFs). These are allowed to invest in foreign assets that offer higher returns than are possible under central banks’ investment guidelines.

Since SWFs hold the funds in trust on behalf of a country’s present and future citizens, they have a duty to preserve the principal and earn a “reasonable” return. To obtain financing from them, infrastructure projects need to offer attractive financial returns at an acceptable level of risk. In principle, then, it should be possible to tap this source of funding for large individual projects that are financially viable, as well as dedicated infrastructure funds that operate on a commercial basis. In both cases, projects involving PPPs are likely to form the basis for attracting financing from SWFs.

Unfortunately, the EU’s experiences—and current financial condition—suggest that very few regional projects are likely to be based on PPPs, so it is not prudent to expect SWFs to be a major direct source of financing for regional infrastructure. It may, however, be possible to persuade some SWFs to allocate a small part of their portfolio to specialized funds created by an institution—such as ADB—that already

has an investment-grade rating and is willing to absorb many of the risks. Infrastructure investments by foreign investors face special types of risk because of their long development time, currency exposure, political risks, possibility of cancellation, possible underutilization, and so on. Official guarantees can make projects bankable by ensuring against specific risks—indeed, official guarantees by AAA-rated institutions can open new and cheaper funding channels that can enable the building of infrastructure that otherwise would not be funded.

In the medium term, Asia needs to develop deeper and more robust domestic financial markets to help fund bankable infrastructure projects. In Chile and Mexico, for instance, private pension funds have created large financial resources focused on long-term investments. Over time, these could also be complemented by regional financial markets. But this will take time. In the short term, infrastructure—and regional infrastructure in particular—will be funded largely by the public sector, complemented by domestic savings where possible.

## Commercial Financing

Commercially viable projects and companies (whether national or regional) can readily be financed in a variety of ways: they can tap domestic equity markets; can borrow from domestic counterparties such as the corporate sector, financial institutions, and households, either through bond markets or long-term bank loans; and can seek external finance, where possible. This could involve equity financing through FDI in countries where the government permits foreign participation in infrastructure projects. It could also involve borrowing from regional or international debt markets, where prudential controls on borrowing in foreign currencies do not prevent this.

To borrow long-term funds from international debt markets, developing Asian countries need to create mechanisms for nonspeculative, natural counterpart-funded cross-currency swap markets. Exchange controls must also be liberalized to reassure investors that projects will be able to access long-term foreign currency funding.

Commercially viable projects and companies can—and should—be financed through the normal financial instruments available in well-developed financial markets. Special new instruments or institutions are not needed. Experience in Asia and elsewhere with PPPs for cross-border infrastructure projects shows that project financing arrangements generally have to be tailored to the specific needs of each particular project. Rather than creating unnecessary special instruments to provide financing for a handful of investments in cross-border infrastructure projects, efforts should focus instead on developing and properly regulating domestic and regional financial markets to help mobilize and allocate domestic savings effectively and efficiently across the whole economy, and meet the diverse needs of all investors and consumers. In this context, ongoing efforts to develop national and regional equity and bond markets will help boost investment in infrastructure. Two valuable regional initiatives—the ABF and ABMI—acquire added urgency and priority. Islamic financial instruments also offer an attractive source of financing for regional infrastructure projects, as Box 5.5 describes.

#### **Box 5.5. Islamic Financial Instruments**

**I**slamic capital markets offer a huge potential source of finance for infrastructure investment. The global market for *sukuk* (Islamic bonds) is more than \$100 billion and is growing by an estimated 25–35% a year. Two thirds are issued in the Malaysian market, leaving Southeast Asia well placed to absorb Islamic funding. The size and number of sharia-compliant private-equity funds has also increased in recent years, in both Islamic and non-Islamic markets.

Islamic bond and equity markets in Kuala Lumpur and the Middle East could potentially generate significant funds for infrastructure projects that comply with sharia financing principles. This requires that consultations begin during the planning stages of infrastructure projects on how to configure the financial package to meet sharia requirements and how to appeal to Islamic investors. Currently, each project requires customization to meet Islamic requirements, but work is under way to create standardized documentation. This will greatly facilitate the process. This study proposes that a small working group on Islamic finance for infrastructure should be created to work primarily with the Islamic Financial Services Board in Kuala Lumpur to promote this standardization and explore the potential for expanding Islamic financing.

Source: Bhattacharyay and Krueger (2009).

## Filling the Gaps

Two important gaps in the financing of regional projects need to be filled. As discussed above, the identification, preparation, negotiation, and evaluation of regional projects involve additional complexities. Their resolution requires considerable time, effort, and expense, and often the involvement of a trusted third party. This is true whether the project is sponsored by public entities or involves private participation. PPPs require extensive due diligence by governments to ensure that costs and benefits are properly estimated and shared. Governments also need to spend considerable sums to assess and address adverse social and environmental impacts. Yet governments are often reluctant to use scarce budgetary resources for regional projects, whose benefits partly accrue to other countries.

It would therefore be very helpful if external aid agencies, preferably multilateral institutions, could provide grants to fund technical assistance to identify, define, prepare, and reach agreement among the governments involved. This could be provided as part (or an extension) of ADB's newly created funds for regional cooperation, such as the Regional Cooperation and Integration Financing Partnership Facility, the Regional Cooperation and Poverty Reduction Fund, and the Investment Climate Facilitation Fund to support technical assistance activities. However, their size may need to be increased substantially (see Bhattacharyay (2008) for details).

Second, as discussed in section 5.3, the EU's experience shows that overcoming the challenges of agreeing on and implementing regional projects often requires concessional financing from an external source. Asia needs to create a mechanism for this purpose. A good start could be made on this by using more vigorously the provision in the latest replenishment of the Asian Development Fund for supporting projects that enhance regional cooperation, including greater trade and investment flows within the region. Building physical connectivity through regional infrastructure projects fits well with this objective of the Asian Development Fund. International Development Association funds managed by the World Bank could also help prepare and finance regional projects.

Various proposals (see Bhattacharyay and Krueger (2009) for details) for one or more new specialized multilateral entities dedicated to infrastructure financing in Asia have been floated. But it would appear hard to justify the huge effort and cost of setting up a new institution, especially given the renewed emphasis on infrastructure from nearly all multilateral and bilateral aid agencies active in Asia. Perhaps most importantly, such proposals do not have the necessary political support from a broad group of Asian governments. Working with existing institutions is therefore both more desirable and more realistic.

The binding constraint for infrastructure development in Asia is not a lack of financing. On the contrary, Asia is flush with capital. The countries accounting for 95% of Asia's total investment needs—PRC, India, Japan, Republic of Korea, Malaysia, Thailand, and Viet Nam—all have high domestic savings rates. The real constraints include a lack of bankable projects; inadequate policy and institutional frameworks; weaknesses in the public sector that hamper its capacity to implement infrastructure projects (except in the PRC); weak support for PPPs (except in Republic of Korea, Malaysia, and, recently, India); and underdeveloped domestic and regional capital markets, especially bond markets.

## Asian Infrastructure Fund

Therefore, Asia needs an appropriate mechanism or instrument such as a pan-Asia infrastructure fund. Asia should create a large Asian infrastructure fund (AIF) that would mobilize Asian and international funds, and help prepare and finance bankable regional infrastructure projects. A move in this direction has been initiated by ADB through its Asian Infrastructure Financing Initiative (ADB 2008j).

The AIF's capital—which should include grant and concessional resources—could come from a variety of sources, notably governments, MDBs, and bilateral agencies. Efforts should be made to persuade some of Asia's SWFs to allocate a small proportion of their assets to such a fund. The fund could be managed under an appropriate governance

structure, for instance, as a trust fund. It should have a legal identity so as to help finance projects through its own resources as well as by issuing bonds or through cofinancing with other entities.

The AIF could help mobilize capital from cofinanciers, including national governments and institutions, such as national development banks and export-import banks, and investors interested in portfolio investment, notably pension funds and private investors, as well as Islamic financial institutions.

The AIF would help finance projects identified, agreed upon, and prioritized by the PAIF. It would need a project preparation facility (in addition to the existing regional technical assistance facility provided by multinational agencies such as ADB) to expedite and help finance the preparation, development, negotiation, and evaluation of formally agreed upon regional projects. It would also need a dedicated facility to provide grant and concessional financing to make the projects financially viable and bankable and to give countries the necessary incentives to prioritize regional projects in their own development programs. It may also need to provide guarantees against major risks, such as operational, financial, country, and political risks.

## 5.6. Conclusions

The public sector will necessarily continue to play a dominant role in developing and funding Asian infrastructure. Spending from government budgets will be supplemented primarily by funds channeled through domestic financial markets. The following six complementary steps would support the financing of national and regional infrastructure projects:

- Establish policy, legal, and institutional frameworks that improve the financial viability of infrastructure services and companies and the bankability of infrastructure projects.
- Promote competition and PPPs vigorously, while improving the effectiveness of regulatory frameworks that protect the public interest, particularly in sectors such as telecommunications, energy, and transport.

- Negotiate and agree on nondiscriminatory investment-protection treaties—along the lines of ASEAN’s Comprehensive Investment Agreement—to facilitate greater private investment within Asia, including regional infrastructure projects involving PPPs.
- Redouble efforts to develop more efficient, robust, and deep financial markets, particularly corporate bond markets, equity markets, and contractual savings institutions.
- Develop local currency capital markets that can effectively intermediate local savings, reduce currency risks to investors (including by creating nondiscriminatory currency swap instruments for long-term debt), and create a more stable financial system.
- Accelerate existing initiatives to create regional bond and equity markets in Asia—the ABF, ABMI, and ASEAN Equity Markets project—and to integrate national markets, wherever feasible, into broader regional ones.

Domestic savings need to be supplemented by public-sector initiatives supported by external aid agencies. Multilateral and bilateral institutions—especially ADB, World Bank, International Finance Corporation, Islamic Development Bank, JBIC, JICA, and the UK’s Department for International Development—have traditionally played an important role in supporting infrastructure development in the region through financial and technical assistance. This support must be continued, and indeed increased. Fortunately, all major multilateral institutions have recently adopted new assistance strategies that have put greater emphasis on infrastructure. The long-term strategic framework approved by ADB’s Board of Governors in May 2008 emphasizes all three of the areas highlighted above: infrastructure development, financial sector development, and regional cooperation.

This study also proposes that a large AIF should be created to help mobilize Asian and global funds, and to help prepare and finance bankable regional infrastructure projects.