Building Asia's Infrastructure: Issues and Options

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Emerging Markets Forum
22 September 2006
Jakarta

I. Asia's Extraordinary Transformation

Asia has always recognized the role of infrastructure in creating wealth. Archeological evidence points to the exchange of goods between Mesopotamia and the Indian and the Chinese territories between 7500 and 4000 BC. The Silk Route created prosperous clusters of towns and trading posts while connecting Asia and Europe through the Middle East. In more recent history, Asian nations were openly trading with each other long before Europeans arrived in the region. And historians have argued that it is the capabilities developed through this long history of intra-Asian trade that allowed Japan and the newly industrialized economies to emerge as economic success stories in the late 20th century. What is also an interesting fact is that most of this was enabled through private initiative and enterprise.

The private sector has continued to be an engine of Asia's phenomenal growth. Today, Asia hosts four of the ten largest world economies- Japan, the People's Republic of China (PRC), India and Korea, accounting for almost 30% of total world GDP. Asian Development Bank's (ADB) most recent estimates suggest that developing Asia experienced expansion in 2006 with average rate of 8.3% despite numerous external challenges and shocks, and that the average growth will continue to be 7.6% per year in 2007 and 7.7% in 2008. [1] Asia has also achieved rapid poverty reduction: there were 300 million fewer people living in poverty in 2003 compared with 1990 (ADB 2005).

[1] Developing Asia includes all of ADB's developing member countries.

Strong export growth and high foreign direct investments have been two important drivers of this growth. First the Asian Tigers, and then Southeast Asia and PRC, have enjoyed a virtuous cycle of regional trade and investment through the medium of production networks. More recently, South Asian countries are also creating their own route to sustained growth and poverty reduction. Over the last 20+ years, Asia's exports to the world have grown at the rate of 11% per annum (or from a level of $162 billion in 1980 to $1.9 trillion in 2004). Asia now accounts for a quarter of world exports.

This strong export growth in recent years has been marked by a rapid increase in the absolute and relative significance of intraregional trade (Table 1). Asia as a whole has reported an average growth of nearly 17% per annum for regional exports. Southeast Asia and PRC reported an annual average growth of over 20% during 1980–2004 whereas South Asian exports grew on average by 10% a year. Data for imports show similar trends. The degree of integration measured through intraregional trade in East Asia has been rising quickly: from 35% in 1980 to 55% in 2005, if Japan is included, and from 22 to 45% without Japan. This share is similar to the North American Free Trade Agreement (NAFTA) area although it remains somewhat lower compared with the European Union.

Table 1. Importance of Intraregional Trade in Asia (percent of total trade)

Region	*1980*	*1990*	*2000*	*2005*
East Asia (including Japan)	34.6	43.0	51.9	54.5
Emerging East Asia	22.1	32.8	40.4	44.7
Asian NIEs	6.4	11.9	15.5	13.5
ASEAN	17.9	18.8	24.5	24.0
NAFTA	33.8	37.9	48.8	45.0
European Union-15	60.7	66.2	62.3	60.1

East Asia = Japan and emerging East Asia; Emerging East Asia = Asian NIEs and ASEAN; Asian NIEs = newly industrialized economies; ASEAN = Association of Southeast Asian Nations; NAFTA = North American Free Trade Agreement
Source: Kawai (2007)

Much of this is due to rapid trade liberalization in these economies in the 1990s and beyond. Several economies in the region reduced tariff barriers significantly: for example, overall tariff rates were reduced by 50% in the PRC, Malaysia, Philippines, and Thailand, whereas South Asian countries such as Bangladesh and India reduced average import tariffs by two thirds. In most countries, tariff reductions were also accompanied by removal of nontariff barriers and simplification of customs rules and regulations (Dollar and Kraay 2001).

The expansion in trade in Asia has been accompanied by a rapid rise in foreign direct investment (FDI) during this period: though the United States and the European Union are all important, Japan is the largest developed country investor in ASEAN, with the exception of Singapore. In the case of the PRC, Hong Kong, China is the largest investor. FDI inflows rose more

than 28 times in 24 years during 1980–2004. In 2004, the East and Southeast Asian economies accounted for over 59% of all FDI inflows in developing economies (UNCTAD 2005). Today, one of the most important destinations of FDI remains the PRC: from a level of $57 million in 1980, the PRC was able to attract over $60 billion in FDI in 2004. Most FDIs in Asia were in new, greenfield investments concentrated in manufacturing, but there was also a significant increase in cross-border mergers and acquisitions, largely in service sectors.

Net private foreign equity flows to emerging Asia have been growing steadily as well in recent years, indicating a resurgence of confidence: from a level of only 8% of net private equity flows at the end of the crisis in 1998, Asia accounted for 39% of such flows in 2005. Most Asian currencies have also appreciated relative to the dollar (ADB, 2006). The economies are firmly back on the path of sustained growth.

II. Infrastructure Development

The development of infrastructure has facilitated this growth, by integrating Asia both globally and regionally. Until the 1997 financial crisis, a large part of domestic savings were channeled towards infrastructure development. In fact, the 1994 World Development Report on "*Infrastructure for Development*" comparing performance of East Asia with sub-Saharan region concluded that Asian growth was due to improvements in infrastructure access. More recently, studies have indicated that infrastructure differences account for about one third of the difference in output per worker between Latin America and East Asia (Calderon etc 2003).

Developing Asia has tripled its share of power capacity in the world from 7% in 1980 to almost 22% in 2004 (Table 2). Within developing Asia, most of this growth has come about in the East Asia and Pacific Region reporting more than fivefold increase in total power capacity of 108 Million KW in 1980 to 600 million KW in 2004. During this time, South Asia has quadrupled its capacity from about 35 million KW in 1980 to 140 million KW in 2004. Overall electricity generation has increased from 580 billion kwh in 1980 to over 4000 billion kwh. Within infrastructure sectors, telephone access has grown the fastest: from

Table 2. Increasing Share of Asia in the World

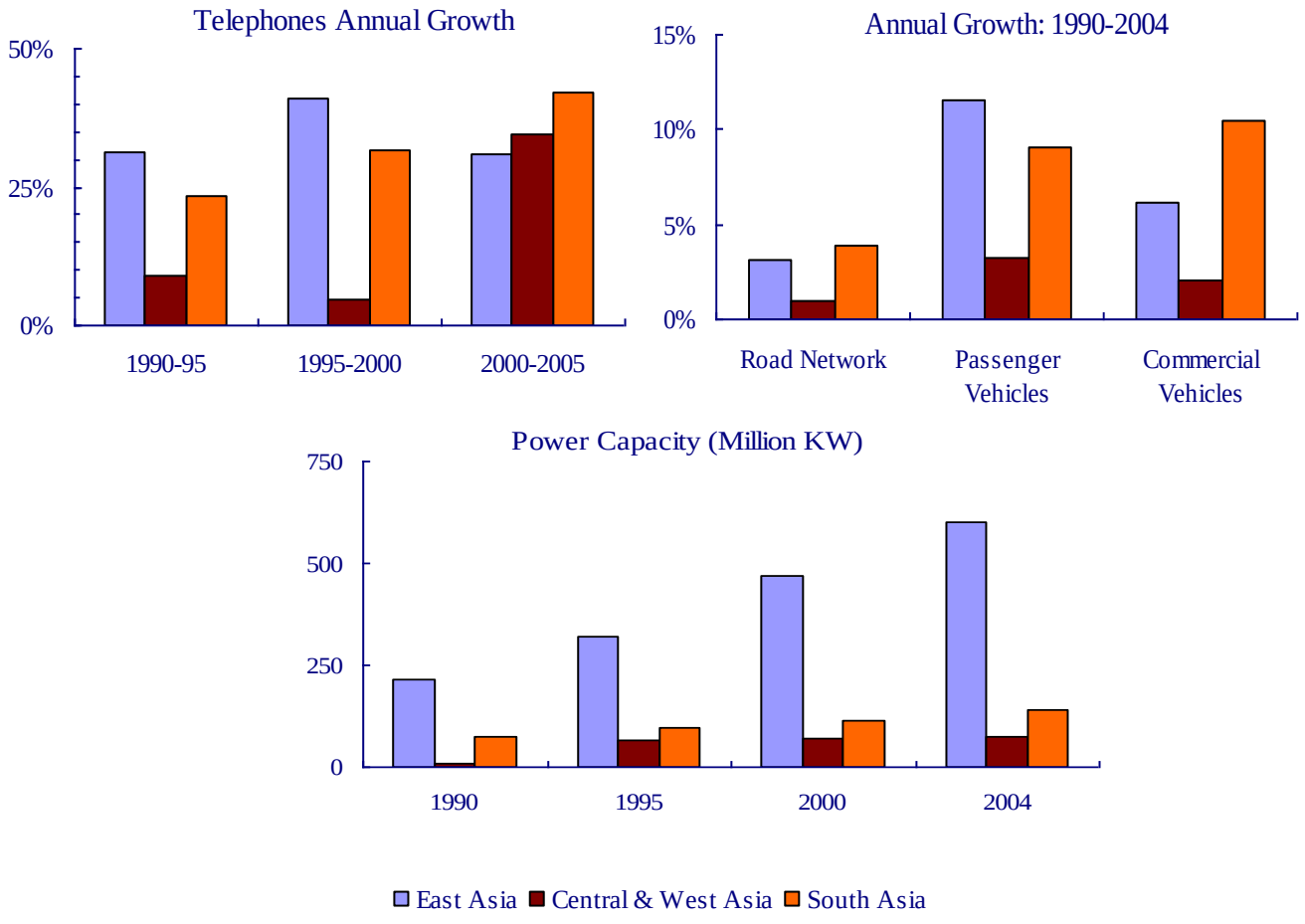
	1980	*2004*
Power Capacity	7.5%	21.8%
Power Generation	7.3%	24.2%
Telephones	4.3%	34.6%

Source: International Energy Annual 2004 & World Development Indicators CD Rom 2006

a small share of 4% in 1980, developing Asia now accounts for little over one third of total subscribers in the world. Total number of telephone mainlines and mobile subscribers in developing Asia have increased from about 13 million in 1980 to 1.2 trillion in 2005.

Not all infrastructure services have seen such phenomenal growth: Transport sector is lagging behind both the other infrastructure sectors in Asia and compared to what is required. Against 10 % annual growth in the passenger vehicles and 7.3% growth in commercial vehicles, road network has grown at average 3.25%. The network quality is also an important constraint facing many parts of developing Asia as only a small part is paved (Figure 1). Railway network growth is much lower than road network at only 1.0% (ADB 2007). Finally, the overall performance of water and sanitation is also somewhat mixed: it is estimated that about 81% of population has

Selected Infrastructure Indicators



Source: Word Development Indicators 2006

access to an improved water source, however, it is important to note that access to an improved water source does not necessarily mean access to safe drinking water. Overall performance for sanitation is much lower at less than half population having improved sanitation (ADB 2006).

Overall access to infrastructure services remains uneven across Asia (Table 3): While Singapore, Thailand, and Malaysia have achieved universal access for most infrastructure services; Cambodia and Lao PDR have much lower access. For example, with less than 15% electrification

Table 3. Infrastructure Indicators ─ Selected Asian Countries

	Telephones per 100 people		Improved Water %		Improved Sanitation (%)		Road Network Density [a]	Paved Road %	Power Consumption per capita (kwh)	
	1990	**2005**	**1990**	**2004**	**1990**	**2004**	**2004[b]**	**2004[b]**	**1990**	**2004**
Afghanistan	0.2	4.4	4	39	3	36	5	23.7	..	27
Armenia	15.7	26.0	..	92	..	83	27	100	*1958*	1428
Azerbaijan	8.6	39.7	68	77	..	54	68	49.4	*2218*	2437
Georgia	9.9	33.7	80	82	97	94	29	39.4	*1942*	1577
Kazakhstan	8.0	35.4	87	86	72	72	3	93.4	*5354*	3621
Kyrgyzstan	7.2	18.7	78	77	60	59	9	90	*1895*	1421
Pakistan	0.8	11.7	83	91	37	59	34	64.7	277	425
Tajikistan	4.5	4.5	..	59	..	51	20	83	2982	2240
Turkmenistan	6.0	7.9	..	72	..	62	5	81	2006	1740
Uzbekistan	6.9	8.0	94	82	51	67	19	87	2122	1796
Bangladesh	0.2	7.1	72	74	20	39	68	9.5	49	140
India	0.6	12.7	70	86	14	33	114	47.4	275	457
Nepal	0.3	2.6	70	90	11	35	12	30.3	35	69
Sri Lanka	0.7	22.2	68	79	69	91	151	81	154	344
PRC	0.6	56.5	70	77	23	44	20	81	511	1585
Hong Kong, China	47.5	177.4	..	..	..	..	186	100	4178	5699
Korea, Republic of	30.8	128.6	..	92	..	99	102	86.8	2373	7391
Mongolia [c]	3.2	27.0	63	62	..	59	3	3.5	1663	932
Cambodia	0.0	7.8	..	41	..	17	22	6.3	17	62
Indonesia	0.6	26.8	72	77	46	55	20	58	161	478
Lao PDR	0.2	12.0	..	51	..	30	14	14.4	71	160
Malaysia	9.4	92.0	98	99	..	94	30	81.3	1194	3166
Myanmar	0.2	1.3	57	78	24	77	4	78	45	104
Philippines	1.0	45.3	87	85	57	72	67	21.6	360	597
Singapore	36.3	143.2	100	100	100	100	463	100	4860	8170
Thailand	2.5	34.3	95	99	80	99	11	98.5	98	1865
Viet Nam	0.1	30.2	65	85	36	61	68	19	119	501

Notes: [a] kilometers of road per 100 square km of land. [b] refers to 2004 or the latest available year. .. indicates data not available data for power consumption in Central Asian countries pertains to 1992. [c] Data from ADB Key indicators. PRC= People's Republic of China, kwh= kilowatt hours Sources: World Development Indicators 2007, World Development Indicator CD-Rom 2006. CIA World Factbook 2006. International Road Federation Statistics 2004. ADB Kev Indicators

rate of Cambodia means that its per capita power consumption is only 62 kwh compared to over 1865 kwh in Thailand. Moreover, there is a sharp divide between access rates in rural areas and in cities. In rural areas, access rates to good road, safe drinking water, and sanitation services are very low, not only compared to developed OECD countries, but even compared to urban populations in the same countries. Within individual cities, the poor are particularly vulnerable because they are accommodated largely in informal settlements with much lower access rates for water and sanitation, electricity, telephones and other infrastructure services than the rest of the urban population.

After the Asian financial crisis, there was a slow down in overall infrastructure investments across particularly in some of the East Asian countries. In Indonesia for example, infrastructure investments which accounted for 6% of GDP before 1997, have fallen to 2% in recent years, reflecting a sharp decline in public and private spending on infrastructure whereas in the Philippines, infrastructure investments in 2002 were 2.8% compared to high of 8 % in 1997. Even countries like India, which were largely unaffected by the 1997 financial crisis saw a deceleration in infrastructure investments to 3.8% compared to projections of 7.2% of GDP required to sustain economic growth.

Until the onset of the 1997 financial crisis, private investors were playing an important part in meeting the infrastructure challenge in the Asian countries, particularly in the Southeast Asia, accounting for nearly about one third of global private investments in infrastructure. Indonesia and the Philippines welcomed private investors with a set of reforms in legal and regulatory framework for infrastructure sectors (Table 4). During 1990-2005, the developing Asia has reported over $300 billion in private investments financing 1186 projects. Though recent annual investments are not as high as its peak in 1997, there is now a renewed interest in Asia from private investors. Power and telecom sectors seem to dominate these investments. It is interesting to note that after the crisis, there seems to be a

Table 4. Private Infrastructure in Developing Asia

Year	Investments Billion US$	Number of Projects
1990	2.1	16
1991	3.7	11
1992	7.2	26
1993	14.2	58
1994	17.6	104
1995	22.9	98
1996	34.5	141
1997	44.7	141
1998	13.1	72
1999	17.0	72
2000	22.3	63
2001	17.8	79
2002	15.9	75
2003	17.8	83
2004	24.8	78
2005	28.0	69
Total	303.8	1186

Source: PPI Database (2007)

shift in the investors: Asian private sector, both domestic entrepreneurs and multinationals based in Asia rather than global players have returned to infrastructure sectors in Asia. This is an interesting phenomenon because the risk perceptions of global infrastructure operators and those based in the region are different[2] and this can have important impact on infrastructure financing. There is also another reason: the lessons from the 18th century Britain and 19th century USA indicate that it was the need to mobilize large infrastructure financing that provided the much needed impetus for the development of domestic capital markets. The private financing could not only help to build infrastructure, but also domestic capital markets.

Finally, in the 1990s, the largest source of finance had been commercial banks, either directly or through syndicated loans. Following the 1997 crisis, there has been an increase in the cost of lending: from an average of 160 basis points in 1995-97 to 220 basis points in 2002-2003. This increase was largely due to increasing host country risk, rather than global infrastructure industry risk (World Bank 2004). There is some growth in infrastructure financing through bonds, but this is limited to a few countries in Asia.

While emerging infrastructure gaps within countries of Asian countries have not as yet affected the overall export performance, there is an increasing concern regarding the upward rise in overall logistic costs. Inadequate transport and communication infrastructure, uncompetitive transport and logistics sectors, and high fuel costs all contribute to relatively high logistics costs in Asia. In PRC, for example, logistics costs represent nearly 18% of GDP, whereas in North America, the ratio is less than 10%. Moreover, while logistics costs as a percentage of GDP have declined in North America, they have actually increased in Asian countries such as PRC and India (Rodrigues, etc 2005).

A major reason for this is the fast pace of urbanization in Asia resulting in increasing congestion across cities. At the moment, Asia is not as urbanized as some other regions. However, it is expected that Asian cities will need to make space for nearly 1.2 billion new entrants in the next twenty years. Some large cities in the Asian region have begun to reach their capacities and unless large investments in urban transport, roads, and efficient linkages to ports are created to connect these cities with the inland areas, Asian exports would face rapidly increasing logistics costs. Major gaps are emerging in the infrastructure services of some of the urban centers in the Asian cities like

[2] During the 19th century in the United States, it was found that local participation brought local knowledge, improved information flows and in the end became a sustainable source of infrastructure financing.

Manila and Jakarta because the current land use plans did not envisage such large economic expansions. Retrofitting infrastructure in rapidly growing cities is not only expensive, but may involve large environmental and social risks.

Looking forward, Asia's infrastructure demand is expected to grow rapidly in the next few decades. In the past, demands for power and telephones have risen at much faster pace than the rise in per capita incomes across countries whereas the demand for transport has grown at the same rate as income. First, with Asia expecting to grow at 7% per annum, demand for power, water, paved roads or telephones is expected to rise significantly. The second factor driving the high demand is the uneven access rates across countries and even within individual countries. As economies grow, new capacities will need to be created in areas that lack infrastructure services. Third, the overall quality of infrastructure services needs to improve significantly. Power breakdowns, water shortages, and road congestion have ceased to be headlines given the frequency with which these occur across Asia. Finally, with growing stock of infrastructure assets, the needs for maintenance investments are much greater.

Asian Development Bank has recently completed an assessment of infrastructure investment needs for its member countries. The study is based on the methodology used in the previous joint ADB-JBIC-World Bank study; *Connecting East Asia – New Framework for Infrastructure Development*. Using two sets of likely growth scenarios, top down macro model was constructed using panel data for 29 countries for which reasonable time series data were available for infrastructure stocks. Projected infrastructure stock levels were then valued at best practice costs for new infrastructure at 2006 constant prices. Annual maintenance expenditure were estimated as a fixed percentage of the stock value. Table 4 presents total investment requirements for 2006-2015 under two scenarios.

Table 4: Infrastructure Investments Requirements 2006-2015

	Central and West Asia Region		East Asia & Pacific Region		South Asia Region		Total*	
	Base Case	Low Case	Base Case	Low Case	Base Case	Low Case	Base Case	Low Case
New Investments	166	108	2,020	1,624	882	654	3,068	2,387
Maintenance	96	68	1,022	853	482	407	1,599	1,328
Total*	262	176	3,042	2,477	1,363	1,061	4,667	3,715
As % of GDP	7.8%	5.3%	6.8%	5.5%	10.0%	7.8%	7.5%	6.0%

Totals may not match due to rounding off. Regions here represent ADB's country groups except the East Asia and Pacific Region which includes East Asia, Southeast Asia, and the Pacific countries. Source: ADB (2007) Forthcoming.

As can be seen, Asia's infrastructure investment requirements are massive; the 29 DMCs covered in this study would need to invest between US$3.7 trillion (low case) and US$4.7 trillion (base case) in 2006 dollars during the period 2006-2015. Out of these, investments in new capacity would total US$2.4 trillion under the low case and US$3.1 trillion under the base case; the cost of capacity replacement would total US$1.3 trillion and US$1.6 trillion, respectively. The projected investment requirements are equivalent to 7.5 percent of GDP under the base case. Due to differences in the relative GDP growth rates and other factors, there are significant differences between the three sub-regions: East Asia and the Pacific 6.8 percent of GDP, South Asia 10 percent and Central Asia 7.8 percent (all under the base case). Within Asia, by far the largest investment needs are in East Asia and the Pacific (US$3.0 trillion or two thirds of the total under the base case), followed by South Asia (US$1.4 trillion or 29%, also in the base case), and less than 6% in Central Asia (US$262 billion). These estimates reflect the differences in the size and structure of the economies of the three sub-regions as well as the differences in their economic growth rates. China and India dominate these estimates accounting for almost 80% of these requirements. Within infrastructure sectors, power (41%) and roads (24%) will dominate overall requirements. These estimates indicate that with the exception of China, almost all Asian DMCs will have to substantially increase investments in infrastructure. India for example will have to double its current investments to ensure that infrastructure bottlenecks do not place constraints on its growth.

III. Major Challenges

Mobilizing large levels of finances for infrastructure is one of the biggest challenges facing most of developing Asia. A number of Asian countries do not have adequate fiscal space to expand investment levels in a short period of time. In today's world, mobilizing financing requires a balanced approach among different stakeholder groups. The governments need to have a strong strategic vision for infrastructure and its role in the economy. Some of the Asian countries, especially the newly industrialized countries, had followed a path of building infrastructure ahead of demand and have been successful in driving strong economic performance. However, the present infrastructure challenge is not the same as it was in the 1980s. With technological innovations having a major impact on the information flows, much more is demanded today. Infrastructure projects have many more stakeholders than before. The role of civil society in any large infrastructure project has changed. The public sector is also under pressure to improve performance and it is not an easy task to simply raise tariffs. A number of reforms would be needed to enhance accountability of all stakeholders and create the right business environment. Infrastructure investments reflect long term

commitment on both sides. Governments want the predictability of knowing that private sector will remain reliable partners in infrastructure sectors, and private operators need stable and predictable policy regimes and a functioning judicial system. Given that most infrastructure sectors need reforms and restructuring, the most important aspect of creating this environment is to prioritize a series of reforms and prepare an action plan to deliver credible results.

As the "C*onnecting East Asia"* study (ADB etc 2005) pointed out, there is enough private interest even today to support infrastructure investments; however, this interest is not being transformed into infrastructure investment flows as yet. One of the biggest challenges is to strengthen accountability structures for infrastructure. If the right policy environment and business climate were created, most of the private sector operators would be keen to invest in Asian infrastructure. Most Asian countries have a large continuing agenda of reforms and restructuring for their infrastructure sectors and it varies depending on the sector (Table A.1). The telecommunications sector has been able to adopt competitive market structures that allows for greater accountability for performance. In other sectors the performance varies. Power sector reforms are at different stages of restructuring depending on the country, size of the markets and the demand growth. A number of countries have been able to appoint regulators for water or power sectors, but these have not as yet translated into better outcomes for the consumers. Some regulators, such as the Indonesian Water Supply Association, has a set of indicators benchmarking its performance and publishing these on the web, whereas, others, still keep licenses and contracts confidential.

A second challenge is human and institutional capacities: public-private partnership (PPP) transactions offer a new way of meeting infrastructure demand. Any expansion in PPP requires considerable political will to achieve a level playing field for both public and private sectors. The role of the public sector in this new mode is still evolving in almost all countries.

In this new environment, despite huge opportunities and large needs, preparing bankable projects has proved to be a major constraint. The crisis has demonstrated that ultimately, projects must be economically and financially viable: risk mitigation alone cannot offset either poor economics or poor government policies. A viable project requires several crucial elements: an enabling framework of public policy where the private sector has a clear role to play in infrastructure provision; a good, economically relevant project; a responsive government; a reliable private

sponsor; credible contracts; and a financing structure that is sustainable. The private sector can play an important role in designing viable projects; however, this is expensive given the complexity of infrastructure projects, long lead time and high mortality rates. The transaction costs for private projects are typically large ─ between 3-12% of total costs. Infrastructure is capital intensive; hence, these costs are significant and can become an important deterrent. There is also a long, time consuming process and for every project that is successful, ten projects are not.

As financial structuring of PPP projects is new even in developed markets, the already pervasive capacity constraints in developing countries imply that the public sector should find more resources to design projects well in the initial stages. Leaving aside the legal or regulatory impediments affecting private sector participation, it is critical that the contracting agencies or line ministries allocate resources to prepare good quality information memoranda and at least pre-feasibility studies. Recognizing the constraints, ADB is helping some countries in the region through the establishment of Project Development Facilities (PDF). In Indonesia, for instance, discussions are underway to set aside dedicated resources for preparing large scale national and smaller scale decentralized projects. By reducing the information gap, a PDF can help both the public and private sectors in achieving greater competition, better quality, and lower costs of providing infrastructure services. In particular, detailed assessments done by a PDF can help increase the bankability of a project by feeding good quality information to determine the appropriate type (and level) of risk-sharing. Support will also be provided for transparent bidding and execution of project transactions.

Finally, with its large working – age population, Asia is also a high saving region. In 2005, almost all Asian countries reported a higher share of GDP going towards savings compared to 1990. The developing member countries of ADB in 2004 reported a total savings of nearly $1.3 trillion. The biggest challenge is to mobilize a part of these savings through capital market reforms for infrastructure projects. There is a large reform agenda to build capital markets, at the country level, and at the regional level so as to meet the financing requirements for infrastructure.

IV. Asia's Infrastructure Agenda

Though Asia's infrastructure agenda is complex, there is already a broad consensus on the steps that need to be taken in order for it to be implemented. This is because the Asian countries have always recognized the contribution of infrastructure in overall economic development. Further,

the 1997 Asian financial crisis has provided many important lessons and generated the much needed political will to enhance regional cooperation, not only in regional infrastructure projects, but also in much broader areas of financial and monetary cooperation.

There is a large continuing agenda of reforms and modernization for infrastructure sectors in Asia that varies depending on the size and development stage of the individual country. Country-specific solutions require a country-specific strategy and detailed action plans to deal with binding constraints, i.e., creating the necessary fiscal space for infrastructure investments; improving cost recovery especially in the lagging sectors; and strengthening accountability structures, either through more competition or through improved regulation. The efforts are ongoing to create an investment climate that would once again make Asian infrastructure an attractive destination for the private sector.

With a severe paucity of bankable projects, the national governments and official institutions have an important role to play in supporting development of an infrastructure pipeline that will increase the supply of bankable projects by providing resources and sharing in these preparatory risks.

Although the financing requirements for infrastructure in Asia are huge, there is ample scope for enhancing regional financial cooperation to develop, domestic and regional capital markets, harmonize rules and regulations, and allow innovative solutions to meet the huge financial requirements. Asia's savings ratio is much higher than other regions, and thus Asia is not only exporting manufacturing goods and services, but is also an exporter of capital. Since the 1997 crisis, Asia's savings have been increasingly intermediated for Asia's investments in foreign currencies through global capital markets. Strengthening regional and domestic bond markets will be one of the first steps in creating a viable source of infrastructure financing to tap these Asian savings. The Asian Bond Market Initiative is one such option, and was designed to facilitate access to the market by a wide variety of issuers and to create an environment conducive to developing domestic and regional bond markets. This initiative has significant potential to raise resources for infrastructure. Recent examples include Baht denominated bonds issued for a power plant in Lao PDR and other local currency bonds. Actions will need to be taken on several fronts such as developing municipal finance, supporting utility bonds, the securitization of revenue earning infrastructure assets, and developing appropriate guarantee mechanisms. The domestic markets will not be sustainable unless

adequate regulatory reforms are undertaken to ensure appropriate disclosure and capacity-building for investors.

At the global and regional level adequate resources to fund Asia's infrastructure exist. There is a need to integrate Asian capital markets with the global financial system and find innovative solutions. For example, the sheer size of Asian foreign currency reserves opens up a set of opportunities to not only increase the return on these reserves but also meet an important need of the region. Multilateral institutions and regional governments can come together to discuss potential modalities and possible instruments to channel part of these reserves into creation of infrastructure assets, provided adequate safeguards are put in place. Developing regional and domestic capital markets and instruments would be one way, and some have suggested that there may also be other more direct ways to channel these reserves to infrastructure.

In conclusion, Asia's infrastructure agenda remains large and complex. A set of reforms to improve policy environment and governance are under way across Asia. The action will also have to focus on building human capacities, participative processes, and institutions that will strengthen accountability for better infrastructure outcomes. Ultimately, the Asia's infrastructure agenda must go beyond simply looking for financial resources because these resources exist, in large part, within the region. What is needed now are bankable projects, continued and intensified sector reforms, and the political will to unlock the region's huge domestic savings for adequate long-term infrastructure finance. None of this will come without cost – but to neglect concerted action now will mean we all pay a much higher price later.

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Table A.1: Infrastructure Reforms Indicators as of 2004†

	Bangladesh	Cambodia	India	Indonesia	PRC	Malaysia	Mongolia	Pakistan	Philippines	Singapore	Uzbekistan	Thailand	Viet Nam
Power Sector													
Independent Electricity Regulation	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	No	No	No
Private Power Generation	Yes	Yes	Yes	Yes	Yes	Yes	Public	Yes	Yes	--	Public	Yes	*Public*
Power Distribution	Public	Mixed	Mixed	Public	Public	Public	Public	Public	Private	Public	Public	Public	Public
Water Sector													
Water Sector Ownership	Public	Mixed	Mixed	Mixed	Mixed	Mixed	Public	Public	Mixed	Public	--	Mixed	Mixed
Independent Water Sector Regulation	No	No	No	No	--	No	--	No	Yes	--	--	--	No
Telecommunications													
Local Phone Monopoly	No	No	No	No	No	No	No	No	No	No	No	No	No
Mobile Phone Monopoly	No	No	No	No	No	No	No	No	No	No	No	No	Yes
Long Distance Monopoly	No	No	No	No	No	No	No	No	No	--	No	No	Yes
Leased Lines Monopoly	Yes	No	--	No	No	No	No	No	No	No	No	No	Yes
Internet Provider Monopoly	No	No	No	No	No	No	No	No	No	No	--	No	No
Independent Regulation	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	No
Private Capital	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	--	No

† Adapted from Estache 2005

-- No Information Italics indicates that there is now a change in the status

PRC=People's Republic of China