Mobilizing Resources for Infrastructure Investment: A Developing Asia Perspective

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Infrastructure Needs, Economic Growth and Poverty Reduction

• The need for infrastructure development is recognized by the United Nations Millennium Development Goals (MDGs) in respect of water and sanitation, telephones, personal computers and internet users (Willoughby, 2004)

• G-20’s Seoul Development Consensus recognized infrastructure as one of its nine key pillars where “action and reform are most critical to ensure inclusive and sustainable economic growth and resilience in developing countries, especially LIC” (G20 Seoul Summit Leaders’ Declaration)

  – Under the action plans of the G20, a group of six multilateral development banks (MDBs) including the World Bank and the Asian Development Bank (ADB) has prepared The Interim Report (TIR) which includes financing issues (needs, gaps, constraints) and some examples of pilot regional infrastructure development projects.

  – The Report highlights the role of MDBs in leveraging financial resources through partnerships and better practices, and expects the G20 leader to support more efficient spending and to unlock project pipelines with technical assistance and financial support.
Asia – Stylized Facts

• Asia is world’s largest and most populous region
  – 26 million km² land area (30% of the world’s total land area)
  – 3.96 billion inhabitants in 2010 (57% of the world’s population) and set to rise by 23.5% by 2050 to 4.89 billion (ADB 2011)

• Asia has experienced the world’s highest economic growth rates recently making this century as Asian Century
  – The emerging economies of Asia, such as ASEAN, India and China are expected to triple their per capita income over the next two decades if all the risks and constraints can be managed
  – Asia’s economy is approaching the size of Europe’s and N. America’s and it is expected to hold 51% of share of the world economy by 2050 (ADB 2011)

• Rapid economic and population growth; rapid urbanization and the rise of middle class has caused huge and visible pressure on infrastructure, particularly urban infrastructure
  – In almost all the countries of Asia, urbanization is rapid and there is a growing middle class with increasing demand for quality goods and services
  – Infrastructure development such as energy, transport, telecommunications, water and sanitation hasn’t caught up with growth and is not being able to cater the needs
Linkages between Infrastructure Development, Economic Growth and Poverty Reduction

- Rapid infrastructure development (transport, energy, ICT, water, sanitation etc.) has been a critical factor behind Asia’s high growth and poverty reduction.
  - increased connectivity and the formation of the East Asian production networks and supply chain making Asia a factory of the world
  - the economy of many Asian countries flourished as they have become more connected with each other and the rest of the world.
  - Many studies have found that improved basic infrastructure facilities have profound positive effects on economic growth
    - Effective use of infrastructure explained a quarter of growth differential between Africa and East Asia and more than 40% of that between low- and high growth countries
  - Several studies concluded that basic infrastructure development contributed to reducing poverty and improving the standard of living in many Asian countries by providing better access to transport services, markets, education and healthcare, electricity etc.

(Source: ADB/ADBI, 2009)
Shocking Statistics for Asia

- Asia is home to about 1.8 billion people living on less than $2 per day (72 percent of the world’s poor)
- About 1.5 billion have no access to decent sanitation
- 638 million have no access to clean water
- 930 million have no access to electricity
- 1.2 billion have no access to roads
- 47% of total road network are unpaved
- A little under half of the region’s roads are unpaved.
- Compared to all other regions of the world, infrastructure gap in Asia is the highest in absolute numbers.

(Source: ADB/ADBI, 2009; ADB)
Figure 2. Population without Access to Clean Water in Major Developing Regions of World

(Source: WHO and UNICEF 2010)
Population without Access to Electricity in Developing Regions of World

(Source: IEA World Energy Outlook 2010)
Reasons for Increasing Infrastructure Investment in Asia

Enhancing investment in national and regional infrastructure in Asia can
• abate the effects of the recent economic and financial crisis for the following reasons
• enhance competitiveness and productivity, which could help in economic recovery and in sustaining growth in medium to long-term.
• help improve standard of living and reduces poverty by connecting isolated places and people with major economic centers and markets and providing basic services
• narrow the development gap within and among Asian economies through enhancing connectivity, particularly for the smaller and landlocked.
• promote environmental sustainability by designing appropriate projects and through facilitating cross-border trade in environmentally-friendly or clean energy resources across borders.
• facilitate and accelerate regional trade and economic cooperation and integration by increasing regional demand and intraregional trade necessary to rebalance Asia’s and world’s economic growth.

Source: Author, and ADB/ADBI (2009)
Concept of Connectivity

The major components of connectivity include:

- **Physical connectivity (hard infrastructure)**
  - Transport;
  - Energy; and
  - Information and Communications Technology (ICT)

- **Soft Connectivity (soft infrastructure)**
  - Appropriate policies, institutions and regulations facilitating effectiveness of hard infrastructure
  - Trade (goods and services) liberalization, promotion and facilitation;
  - Investment and financial sector liberalization, promotion and facilitation;
  - Agreements/arrangements on mutual recognition of standards, quality, and systems;
  - Regional connecting infrastructure (e.g., transport, energy and telecommunications cross-border agreements) cross-border agreements;
  - Harmonized or standardized cross-border/customs systems and procedures;
  - Capacity and institutions building programs; and
  - Research and development, ideas, innovation, knowledge and technology networks; and

- **People-to-people, Institutions-to-institutions and knowledge connectivity**
  - Educational, commercial and cultural networks;
  - Civil society, NGO, public and private sector networks; and
  - Tourism and hospitality network.

(Source: Adapted from ASEAN, 2010)
Vision of a Seamless Asia

• Seamless Asia – a physically, economically and financially integrated region connected by world-class, efficient and environment-friendly infrastructure networks that promote trade and investments, widen access to markets and public services, promote inclusive and sustainable economic growth, and reduce poverty

• Efficient regional production network and supply chains by streamlining policies, systems and procedures such as customs procedure and other bureaucratic impediments

• Efficient regional financial markets that channel savings from Asia and the rest of the world for productive investments such as infrastructure

• Seamless connections across Asia and with the rest of the world to create a more competitive, prosperous, and integrated region, as well as to take advantage of Asia’s enormous untapped economic potential

(Source: Adapted from Bhattacharyay, 2010)
Example of Pan-Asian Connectivity

AH seeks to improve economic links between Asia, Europe, and the Middle East. It is planned as a network of 141,271 km of standardized highways—including 155 cross-border roads—that crisscrosses 32 Asian countries.

TAR covering a distance of 114,000 km in 28 countries, would link pan-Asian and pan-European rail networks at various locations, connecting major ports of Asia and Europe and providing landlocked countries with better access to seaports either directly or in conjunction with highways.

Source: UN ESCAP 2010a, 2010b, 2010c, and 2010d
Challenges Facing Infrastructure Development in Asia

1. Creating appropriate types of infrastructure that will support the continuing growth and development of the Asian economies and improve the quality of life of billions of people;

2. Identifying the means for addressing pressing human needs of over two billion people who require basic transport (road and rail, waterways and airways), electricity, water and sanitation.

3. Ensuring inclusion so that the resulting economic and social benefits have been very widespread, despite the diversity of the region’s economies;

4. Mobilizing adequate resources for infrastructure development;

5. Preparing a comprehensive and integrated infrastructure plan identifying priority bankable (or viable) projects and financing them through proper mechanisms and instruments;

6. Dealing with the externalities and minimizing the social and environmental costs of the development of a new and effective infrastructure base for Asia; and

7. Dealing with urban infrastructure management to cope up with the extraordinary pace of urbanization in Asia.
Financing Needs for Asia’s National New Infrastructure and Maintenance: 2010-2020

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

Sources: ADBI (2009); Bhattacharyay (2008).
### National Infrastructure Investment Needs in Asia, by region or subregion, 2010–2020

(2008 US$ billion)

<table>
<thead>
<tr>
<th>Sector or Subsector</th>
<th>East and Southeast Asia</th>
<th>South Asia</th>
<th>Central Asia</th>
<th>Pacific</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(value)</td>
<td>(%)</td>
<td>(value)</td>
<td>(%)</td>
<td>(value)</td>
</tr>
<tr>
<td>Electricity</td>
<td>3,182.46</td>
<td>58.2</td>
<td>653.67</td>
<td>28.6</td>
<td>167.16</td>
</tr>
<tr>
<td>Transportation</td>
<td>1,593.87</td>
<td>29.1</td>
<td>1,196.12</td>
<td>50.5</td>
<td>104.48</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>524.75</td>
<td>9.6</td>
<td>435.62</td>
<td>18.4</td>
<td>78.62</td>
</tr>
<tr>
<td>Water and sanitation</td>
<td>171.25</td>
<td>3.1</td>
<td>85.09</td>
<td>3.6</td>
<td>23.40</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5,472.33</strong></td>
<td><strong>100.0</strong></td>
<td><strong>2,370.50</strong></td>
<td><strong>100.0</strong></td>
<td><strong>373.66</strong></td>
</tr>
</tbody>
</table>

Source: Bhattacharyay 2010b
### Investment Needs for Regional Pipeline Projects: 2010-2020

<table>
<thead>
<tr>
<th>Region/Subregion</th>
<th>Transport Projects</th>
<th>Energy Projects</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Asia</strong></td>
<td>177,077</td>
<td>931</td>
<td>–</td>
</tr>
<tr>
<td>Asian Highway</td>
<td>43,276</td>
<td>121</td>
<td>–</td>
</tr>
<tr>
<td>Trans-Asian Railway</td>
<td>82,801</td>
<td>45</td>
<td>–</td>
</tr>
<tr>
<td>Asian Container Ports (^a)</td>
<td>51,000</td>
<td>765</td>
<td>–</td>
</tr>
<tr>
<td><strong>East/Southeast-Central-South Asia (^b)</strong></td>
<td>–</td>
<td>–</td>
<td>22,975</td>
</tr>
<tr>
<td><strong>Southeast Asia</strong></td>
<td>5,858</td>
<td>17</td>
<td>41,444</td>
</tr>
<tr>
<td>GMS</td>
<td>5,858</td>
<td>17</td>
<td>2,604</td>
</tr>
<tr>
<td>Trans-ASEAN Gas Pipeline</td>
<td>–</td>
<td>–</td>
<td>7,000</td>
</tr>
<tr>
<td>BIMP-EAGA</td>
<td>–</td>
<td>–</td>
<td>100</td>
</tr>
<tr>
<td>Others</td>
<td>–</td>
<td>–</td>
<td>31,740</td>
</tr>
<tr>
<td><strong>Central Asia</strong></td>
<td>21,414</td>
<td>38</td>
<td>11,131</td>
</tr>
<tr>
<td>CAREC</td>
<td>21,414</td>
<td>38</td>
<td>10,861</td>
</tr>
<tr>
<td>Others</td>
<td>–</td>
<td>–</td>
<td>270</td>
</tr>
<tr>
<td><strong>South Asia</strong></td>
<td>293</td>
<td>3</td>
<td>6,846</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>204,642</td>
<td>989</td>
<td>82,369</td>
</tr>
</tbody>
</table>

Sources: Bhattacharyay (2008) and adapted from UNESCAP (2006a; 2007a,b; 2008a,b); ADB (2008a); CAREC (2008a,b,c); GMS (2009); ASEAN (2004); Bhattacharya and Kojima (2008); China Post (2007); Kathuria (2006); ADB staff estimates (2008); ASEAN Center for Energy (2005); and Von Hippel (2001).
Asia’s Total Regional Indicative Investment Needs for Identified and Pipeline Infrastructure Projects by Regional or Subregional Program, 2010–2020 (US$ billion)

<table>
<thead>
<tr>
<th>Regional or Subregional Program</th>
<th>Energy</th>
<th>Transport</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Airport Port</td>
<td>Rail</td>
<td>Road</td>
<td>TF / Logistics</td>
<td>Total</td>
</tr>
<tr>
<td>Asian highways</td>
<td></td>
<td></td>
<td></td>
<td>17.43</td>
<td></td>
<td>17.43</td>
</tr>
<tr>
<td>Trans-Asian Railway</td>
<td></td>
<td></td>
<td></td>
<td>107.47</td>
<td></td>
<td>107.47</td>
</tr>
<tr>
<td>Asian container ports</td>
<td></td>
<td></td>
<td></td>
<td>51.45</td>
<td></td>
<td>51.45</td>
</tr>
<tr>
<td>Central Asia Regional Economic Cooperation</td>
<td>15.67</td>
<td>1.35</td>
<td>5.13</td>
<td>12.93</td>
<td>9.93</td>
<td>29.34</td>
</tr>
<tr>
<td>Greater Mekong Subregion</td>
<td>2.60</td>
<td>0.20</td>
<td>1.52</td>
<td>3.97</td>
<td>0.16</td>
<td>5.86</td>
</tr>
<tr>
<td>Association of Southeast Asian Nations (ASEAN)</td>
<td>11.58</td>
<td>16.80</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brunei–Indonesia–Malaysia Philippines East ASEAN Growth Area</td>
<td>0.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Asia Subregional Economic Cooperation</td>
<td>0.13</td>
<td></td>
<td></td>
<td>0.20</td>
<td></td>
<td>0.20</td>
</tr>
<tr>
<td>Other**</td>
<td>61.93</td>
<td></td>
<td></td>
<td>0.09</td>
<td></td>
<td>0.09</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>92.02</td>
<td>52.99</td>
<td>130.92</td>
<td>34.33</td>
<td>10.38</td>
<td>228.63</td>
</tr>
</tbody>
</table>

Note: Regional pipeline infrastructure consists of 1,202 bilateral, subregional, and pan-Asian infrastructure projects.
** Includes projects connecting East/Southeast – Central – South Asia that do not explicitly fall under a sub-regional program.
Source: Bhattacharyay 2010b
Within 2010-2020, Asia needs to invest about US$8.3 trillion (about US$750 billion per year) in both national and regional infrastructure for energy, telecommunications, transport, water and sanitation (Bhattacharyay, 2010b).

Regional resources are invested elsewhere, and infrastructure projects in developed countries attract far greater global private sector funding than developing economies in the region.

Private sector share in East Asia’s infrastructure investment is as low as 5% (Prior to the 1997 crisis it was 20%).
Twin Goals of Financing

• Focus on Asian integration through enhanced regional connectivity—developing and implementing regional infrastructure projects—has high pay-offs for all participating countries.

• Asian large financial and technical resources can be effectively mobilized to meet the large investment needs in productive sectors like infrastructure.
Challenges and Constraints Facing Infrastructure Financing in Asia

• **Limited resources, particularly in the low income countries**
  – Asian LICs and high fiscal deficit countries have limited fiscal space to address the growing needs of infrastructure financing as well as maintenance.
  – Investment needs as percentage of GDP show that it can be a real burden for the poorer and high deficit countries
    • (during the period from 2010 to 2020, Lao PDR, Mongolia and Bangladesh are required to invest as much as 13.6%, 13.45% and 11.56% of their GDP for infrastructure) (Bhattacharyay, 2010b).
  – Maintenance costs for existing infrastructure can consume between 21% (Malaysia) to as high as 90% (Fiji) (Bhattacharyay, 2010b).
  – Needs for concessional funding for LICs from MDBs like ADB and WB

• **Lack of private sector participation**
  – Infrastructure projects are usually complex, expensive and lengthy, hence recouping financial returns also take longer time.
  – Also involve several major risks that can not be effectively managed by the privates sector e.g., political, uncertainties about future costs and revenues, ….
  – Consequently, private parties are usually reluctant to invest in infrastructure.

• **Lack of adequate soft infrastructure: Policy, regulatory and institutional weaknesses in the financial sector for free movement of capital across borders**
  – Insufficient market opening and capital account liberalization;
  – Limited and varying degrees in transparency, financial regulation, financial supervision, and corporate governance;
  – Inadequacies in risk management in financial firms and markets; and
  – Heterogeneity of supervisory, accounting and auditing rules and regulatory frameworks across countries.
Strategy for Financing

1. Large financing needs should be translated into viable and bankable projects
   • Project Development Facilities - (pilot successful cases that can be replicated)
   • Viability Gap Funding Mechanisms

2. Public and Private Partnerships
   • PPP Policy, Legal, and Institutional Frameworks
   • Viability Gap Funding
   • Risk Management Frameworks

3. Regional financing mechanisms
   • Asian financial market integration could enhance cross-border capital and to utilize Asia’s robust savings/foreign exchange reserve for national and regional infrastructure investment.
   • Identify and adopt innovative funding strategies, mechanisms and instruments
   • A pan-Asia or ASEAN + 6 comprehensive investment treaty similar to the ASEAN Comprehensive Investment Agreement is essential to promote free movements of cross-border investment for infrastructure.
Potential sources of financing (2)

• Public Funding:
  ✓ Traditional public sector funding and fiscal stimulus
  ✓ Public sector savings, sovereign wealth funds, foreign reserves

• Pan-Asian and Sub-regional Infrastructure Funds
  ✓ Asian regional infrastructure fund (ARIF)
  ✓ ASEAN Infrastructure Fund (AIF)

• Multilateral Development Banks and Bilateral Agencies
  ✓ Asian Development Bank (ADB)
  ✓ World Bank (WB)
  ✓ Japan International Cooperation Agency (JICA)

• Capital Markets: Local Currency Bond Markets
  ✓ Asian Bond Market Initiative (ABMI)

• Regional Infrastructure Companies for Financing Specific Sectors

• Sovereign Wealth Funds
## Infrastructure Investment in the Stimulus Packages of the Major Asian Economies

(US$ billion)

<table>
<thead>
<tr>
<th>Country</th>
<th>Total Fiscal Stimulus</th>
<th>Infrastructure component</th>
<th>Infrastructure as % of Total Stimulus</th>
<th>Types of Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRC</td>
<td>600.0</td>
<td>275.0</td>
<td>45.80%</td>
<td>Railways, airports, electrical transmission technology, expressways, telecommunications technologies, rural roads, electricity, gas, water, and irrigation projects</td>
</tr>
<tr>
<td>India</td>
<td>60.0</td>
<td>33.5</td>
<td>55.80%</td>
<td>Highway, port, and power sectors</td>
</tr>
<tr>
<td>Indonesia</td>
<td>7.7</td>
<td>1.3</td>
<td>16.90%</td>
<td>Communications and transport infrastructure, rural infrastructure, and development of ports and shipping industry</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>8.0</td>
<td>4.8</td>
<td>60.00%</td>
<td>Infrastructure spending</td>
</tr>
<tr>
<td>Thailand</td>
<td>46.7</td>
<td>30.6</td>
<td>65.50%</td>
<td>Water resource development and road construction in villages and rural areas along with transport, logistics, energy, and telecom improvements</td>
</tr>
<tr>
<td>Malaysia</td>
<td>2.0</td>
<td>0.2</td>
<td>8.50%</td>
<td>Low and medium cost housing, upgrade, repair, and maintain police stations and army camps, and public and basic infrastructure project maintenance</td>
</tr>
<tr>
<td>ROK</td>
<td>11.0</td>
<td>3.2</td>
<td>29%</td>
<td>Roads, universities, schools, hospitals</td>
</tr>
<tr>
<td>Japan</td>
<td>$154.55</td>
<td>Above 16%</td>
<td>Above 10%</td>
<td>- Yen 1.6 trillion for fostering environmentally friendly technologies, including plans to provide cheaper solar power to homes. - Up to $2,500 as tax breaks to consumers on purchases of “green” cars; subsidies of 5% on energy efficient televisions and other appliances.</td>
</tr>
</tbody>
</table>

Notes: PRC: People’s Republic of China, ROK: Republic of Korea  
Sources: Author’s estimations from data in: Kang (2010); Sugimoto (2010); Kumar and Soumya (2010); Patunru and Zetha (2010); Nguyen, Nguyen, and Nguyen (2010); Jitsuchon (2010); World Bank (2009); FAITC (2009); Alibaba.com (2008); IFCE (2009); Economy Watch (2010); (Tabuchi 2009).
### Financial Resources in Asia: Savings and Reserves in Selected Asian Economies

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PRC</td>
<td>4,985</td>
<td>2355*</td>
<td>47%</td>
<td>2,399</td>
<td>48%</td>
</tr>
<tr>
<td>Hong Kong, China</td>
<td>N/A</td>
<td>64*</td>
<td>-</td>
<td>256</td>
<td>-</td>
</tr>
<tr>
<td>Japan</td>
<td>5,068</td>
<td>N/A</td>
<td>-</td>
<td>997</td>
<td>20%</td>
</tr>
<tr>
<td>Korea, Rep. of</td>
<td>883</td>
<td>286*</td>
<td>34%</td>
<td>265</td>
<td>32%</td>
</tr>
<tr>
<td>East Asia-4</td>
<td>10,885</td>
<td>2,705</td>
<td>25%</td>
<td>3,917</td>
<td>36%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>540</td>
<td>83</td>
<td>15%</td>
<td>61</td>
<td>11%</td>
</tr>
<tr>
<td>Malaysia</td>
<td>192</td>
<td>N/A</td>
<td>-</td>
<td>93</td>
<td>48%</td>
</tr>
<tr>
<td>Philippines</td>
<td>160</td>
<td>26</td>
<td>16%</td>
<td>38</td>
<td>24%</td>
</tr>
<tr>
<td>Singapore</td>
<td>182</td>
<td>87*</td>
<td>48%</td>
<td>186</td>
<td>102%</td>
</tr>
<tr>
<td>Thailand</td>
<td>264</td>
<td>80*</td>
<td>30%</td>
<td>134</td>
<td>51%</td>
</tr>
<tr>
<td>ASEAN-5</td>
<td>1,338</td>
<td>276</td>
<td>21%</td>
<td>511</td>
<td>38%</td>
</tr>
<tr>
<td>India</td>
<td>1,310</td>
<td>410*</td>
<td>31%</td>
<td>259</td>
<td>20%</td>
</tr>
<tr>
<td>Asia-10</td>
<td>13,533</td>
<td>3,390</td>
<td>25%</td>
<td>4,686</td>
<td>35%</td>
</tr>
</tbody>
</table>

Note: NA = Not Available  
*2008 Data

### Types of Risk and Mitigating Instruments

<table>
<thead>
<tr>
<th>Risk</th>
<th>Instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exchange risk</td>
<td>Exchange rate guarantees; currency baskets</td>
</tr>
<tr>
<td>Inflation risk</td>
<td>Inflation-linked instruments</td>
</tr>
<tr>
<td>Commodity price risk</td>
<td>Commodity price-linked instruments</td>
</tr>
<tr>
<td>Credit risk</td>
<td>Credit guarantees</td>
</tr>
<tr>
<td>Demand (traffic) risk</td>
<td>Demand (traffic) guarantees</td>
</tr>
<tr>
<td>Economic risk</td>
<td>GDP-linked instruments[1]</td>
</tr>
</tbody>
</table>

[1] GDP-linked bonds lower debt service payments in times of economic distress, helping governments avoid default from revenue-related fiscal shortfalls, and offer investors premium returns if GDP growth is strong.

Source: Bhattacharyay (2011)
Potential Infrastructure Financing Instruments

• Guaranteed and Linked Bonds
  - Exchange rate guarantees; currency baskets, inflation-linked instruments, commodity price-linked instruments, credit guarantees, demand (traffic) guarantees, GDP-linked instruments

• Mobilising Funds from Islamic Financial Markets
  – Islamic bonds (sukuks) from Islamic Development Bank (IDB)
  – Financial markets in the Middle East and Malaysia

• Private Sector
  – Public-Private Partnerships (PPP)
  – Build, Operate and Transfer (BOT)
  – Privatization
  – Private Finance Initiatives (PFI)

• Asian Infrastructure Currency Unit (AICU) Based Bond
Trends in Private Infrastructure Investments by Major Developing Regions: 1990-2008

Source: World Bank PPI Database (http://ppi.worldbank.org/)
From 1990-2008, the total private investment committed to infrastructure amounted to US$1,640 billion for the world and US$472 billion for Asia-Pacific (Source: World Bank 2011)
Characteristics of Existing Asian Institutions for Infrastructure Connectivity

- Many overlapping subregional institutions operating with varying speeds & addressing regional infrastructure issues in different degrees, with multiple objectives
- Number of participating countries vary from 3 to 16 countries
- Most subregional institutions are informal (except ASEAN and SAARC) – no legal binding or enforcement capacity
- Even formal ASEAN follows non-interference, sovereignty, incrementalism, and consensual decision-making
- Most operate at summit/ministerial level-some at senior officials level
- Most take advisory, regulatory, and financing modalities
Architecture for Subregional Integration and Cooperation

Source: ADB/ADBI (2009) and Bhattacharyay (2008)
The Asian Development Bank (ADB) has been playing an important role in financing and sustaining development in Asia. ADB uses its comparative strengths, along with the other development institutions and developing countries, to achieve the UN Millennium Development Goals (MDGs) as appropriate global benchmarks for tracking the key elements of poverty reduction and human development.

It recognizes that to prevent the adverse impacts of the ongoing global financial crisis, the Bank should provide more resources to support growth through infrastructure development.

‘Strategy 2020’, ADB’s long-term strategic framework, has three pillars: inclusive economic growth, environmentally sustainable growth, and regional integration. Its infrastructure projects in the member countries are streamlined in accordance with these three pillars.

ADB has four core areas of operation which either directly or indirectly facilitate infrastructure development and financing.
Role of the ADB (2)

- The **infrastructure core** focuses both on building physical assets and related institutional/policy reforms, and aims at promoting investments in improving transport, communication, and energy connectivity within and between developing member countries.
- The **environment core** thrives for ensuring sustainable development.
  - Clean energy initiatives (i) Triple Currency Bond / Clean Energy Bond - $5 billion ii) Solar Power Initiative - $2.25 billion
- **Regional cooperation and integration** focuses on increasing financial resources for regional programs and projects including regional infrastructure development and connectivity, and supporting developing member countries and regional bodies to build their institutional capacity to manage regional cooperation and integration.
- The **financial development core** supports the development of financial infrastructure, institutions, and products and services; facilitates the creation of a harmonized regulatory framework, a common credit guarantee mechanism, and a regional clearing and settlement system; and promotes channeling the region’s savings into the most productive investments, particularly development of the capital market.
### ADB’ Lending by Types of Infrastructure 2008–2010 ($ million)

| Sectors                  | 2008–2010 (Average)
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$</td>
</tr>
<tr>
<td>Infrastructure</td>
<td></td>
</tr>
<tr>
<td>Energy</td>
<td>2,331</td>
</tr>
<tr>
<td>Transport</td>
<td>3,265</td>
</tr>
<tr>
<td>Water</td>
<td>816</td>
</tr>
<tr>
<td>General Infrastructure</td>
<td>1,470</td>
</tr>
<tr>
<td>Other Sectors</td>
<td>3,025</td>
</tr>
<tr>
<td>TOTAL</td>
<td>10,908</td>
</tr>
</tbody>
</table>

**Notes:**

- **a** Others include Finance Sector Development, Education, Public Sector Management, Industry and Trade and Disaster and Emergency Assistance.
- **b** 2009 data excludes Countercyclical Support Facility amounting to $2.5 billion and the PSOD equity component of INO: Indonesian Infrastructure Financing Facility.

• Asia’s market-led integration and fragmented institutional arrangements calls for a pan-Asian approach with a new pan-Asian institutional framework integrating existing subregional institutions:

  – **Pan-Asian Infrastructure Forum (PAIF)**
    • Coordinate and integrate existing subregional initiatives toward a seamless Asia with: (i) explicit, treaty-based, legally binding rules and (ii) regulations with compliance monitored by a standing body or secretariat

  – **Asian Regional Infrastructure Fund (ARIF)**
    • Mobilize international funds (public and private) and help prioritize, prepare, and finance “bankable” regional connectivity projects
Institutional Framework for Pan-Asian Connectivity

Financing Institutions/Mechanisms:
- Asian Regional Infrastructure Fund
- Multilateral Development Banks
- Bilateral Funds
- National Governments
- Private Sector
- Public-Private Partnerships

Pan Asian Infrastructure Forum
Programs for a Pan-Asian Infrastructure Network connecting sub-regions to each other

Sub-regional Infrastructure Institutions
Programs for Sub-regional Infrastructure Networks connecting neighboring countries within sub-regions

National Infrastructure Institutions
Programs for National Infrastructure Networks connecting interiors to economic centers and ports within countries

Institutional Coordination Arrangements
- Pan-Asian cooperation, coordination, and partnership through a Pan-Asian Infrastructure Forum
- Cooperation, coordination, and partnership through sub-regional infrastructure institutions
- Cooperation, coordination, and partnership among national institutions

Source: Bhattacharyay (2010a)
Key policy recommendations (1)

• Addressing the financing problem of Asia’s infrastructure—i.e., increasing the use of regional resources for investment priorities—requires innovative national, subregional and regional financing mechanisms and appropriate financial instruments as well as financial markets that are more developed, efficient, linked and integrated.

• In line with the recommendations of the Interim Report discussed at the G20 DWG meeting in Cape Town (30 June 2011), leaders of G-20 economies need to ensure more efficient spending and facilitate unlocking the pipeline infrastructure development projects.
  – This will require technical assistance and financial support. MDBs have to play an important role by leveraging financial resources through co-financing from other development partners and private sector. They need to develop best practices for effective designing and implementation of complex and large projects.
Key policy recommendations (2)

- Develop bankable projects and minimize associated risks
- Develop and strengthen new infrastructure financing funds
- Strengthen soft infrastructure together with hard infrastructure to make the latter work effectively
- Integrate, deepen and link the financial markets, especially local currency and regional bond markets:
  - Develop innovative financial instruments
  - Develop new and strengthen existing national, subregional and regional institutions
- Mobilize private financing through PPP
- Enhance support of MDBs for concessional financing and capacity building of LIC
References

Thank You!

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