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# Infrastructure Financing in Asia

## – Current Situation and Future Outlook –

Yohei Kitano  
Senior Analyst,  
Nomura Institute of Capital Markets Research

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### I. Initiatives to promote infrastructure finance

On 24 October 2014, 21 nations<sup>1</sup> in Asia and the Middle East signed a Memorandum of Understanding (MOU) regarding the establishment of the Asian Infrastructure Investment Bank (AIIB), a new international financial institution proposed by China that will be dedicated to financing infrastructure projects in Asia. Japan has not indicated its participation in the AIIB, which is to be established by the end of 2015, with headquarters in Beijing. The bank will be capitalized at \$100 billion (\$50 billion initially), with China expected to be the major capital contributor. No concrete business plans have been announced as of this writing<sup>2</sup>, focusing considerable attention on how and to what extent the new institution will cooperate with existing international financial institutions that support infrastructure development in Asia, i.e. the World Bank Group and the Asian Development Bank (ADB).

Japan's post-war economic reconstruction in the 1950s and 1960s was supported by a large amount of borrowings from the World Bank<sup>3</sup>. Major infrastructure projects that received the World Bank's financing support included the construction of the Tokaido Shinkansen and the Tomei Expressway. Such large infrastructure projects played a major role in Japan's rapid economic growth. Today, Asian nations are experiencing similar rapid economic growth, but further infrastructure development will be essential to sustaining that growth and continued economic development. Asian nations' ability to effectively and efficiently procure the needed funds has therefore become a key issue.

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<sup>1</sup> The 21 nations that signed the MOU, in alphabetical order, are Bangladesh, Brunei, Cambodia, China, India, Kazakhstan, Kuwait, Laos, Malaysia, Mongolia, Myanmar, Nepal, Oman, Pakistan, the Philippines, Qatar, Singapore, Sri Lanka, Thailand, Uzbekistan, and Vietnam. Soon thereafter, Indonesia, the Maldives, New Zealand, Tajikistan, and Saudi Arabia also declared their intention to participate, raising the total of prospective founding members to 26 as of January 2015.

<sup>2</sup> For more details on the AIIB, please see Sekine, E., *Chūgoku seifu ni yoru ajia infura tōshi ginkō setsuritsu no nerai to kongo no tenbō* (The Intent behind China's Establishment of the AIIB and Future Prospects), Nomura Capital Markets Quarterly, Winter 2015 (Japanese only).

<sup>3</sup> From 1953 to 1966, Japan borrowed a total of around US\$860 million from the World Bank for the financing of 31 projects. Japan completed debt repayment in 1990.

In this report, we present the current state of infrastructure financing in Asia and consider the prospects for the future

## **II. Huge needs for infrastructure development in Asia**

### **1. Underdeveloped infrastructure**

The World Economic Forum's annual Global Competitiveness Report<sup>4</sup> includes infrastructure among the pillars, or indicators, it uses to measure nations' global competitiveness. This reflects the importance of transportation, electricity and telecommunications infrastructure to efficient and robust economic activity. Looking at the infrastructure scores of Asian nations, Hong Kong and Singapore stand out not just in the region but globally, ranking first and second respectively in the WEF's Global Competitive Index (GCI) for infrastructure (Figure 1). While the scores of almost all nations have risen since 2006, the increase in Indonesia's score stands out, reflecting the Indonesian government's emphasis on infrastructure development in recent years. On the other hand, many Asian nations' scores are below the global average. In addition, comparisons with economic scale (size of GDP) show that infrastructure development in countries such as China and India greatly lags their overall economic development.

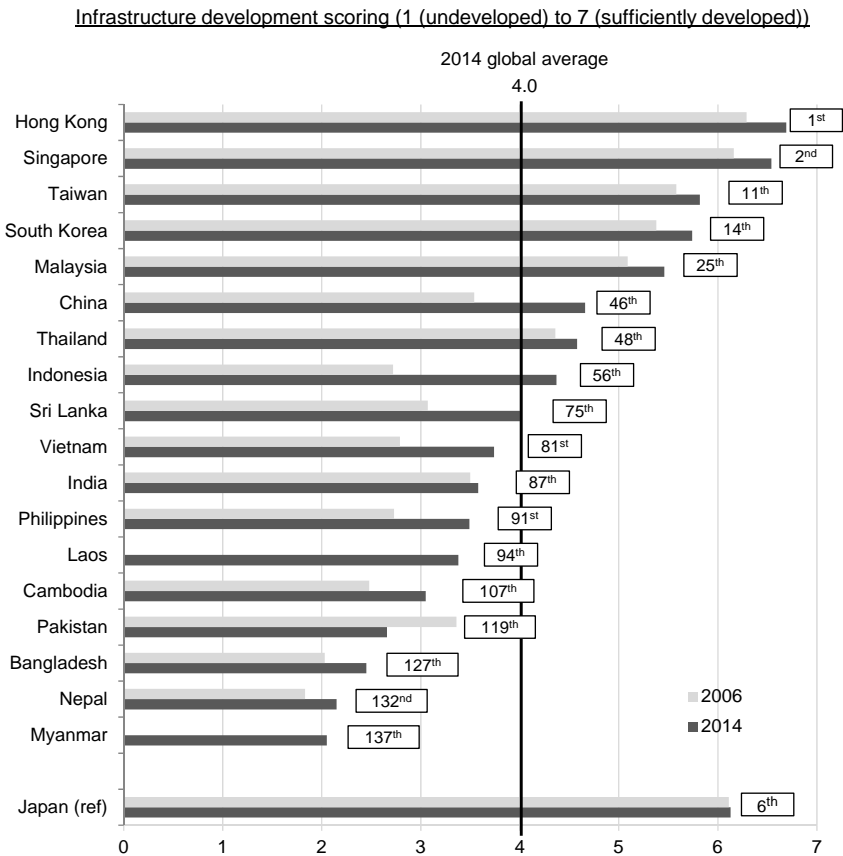
According to the results of a survey of Japanese companies with overseas operations released by the Japan Bank for International Cooperation in November 2013, many Japanese companies cite insufficient infrastructure as one of the main challenges for their local operations in Asia. In particular, the Japanese companies pointed out insufficient electricity infrastructure throughout Asia, the problem mentioned by more than 30% of responding companies in all Asian nations except Malaysia and Thailand (Figure 2, left graph). The specific problem cited by the largest number of survey respondents was "insufficient supply of electricity" followed by such "quality issues" as power outages (Figure 2, right graph).

As the above reports indicate, Asia has made progress in developing infrastructure but still has a long ways to go. Further development is essential for Asian nations to improve their domestic business environments, raise productivity and attract foreign investment as they strive to sustain high levels of economic growth.

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<sup>4</sup> The World Economic Forum, "The Global Competitiveness Report".

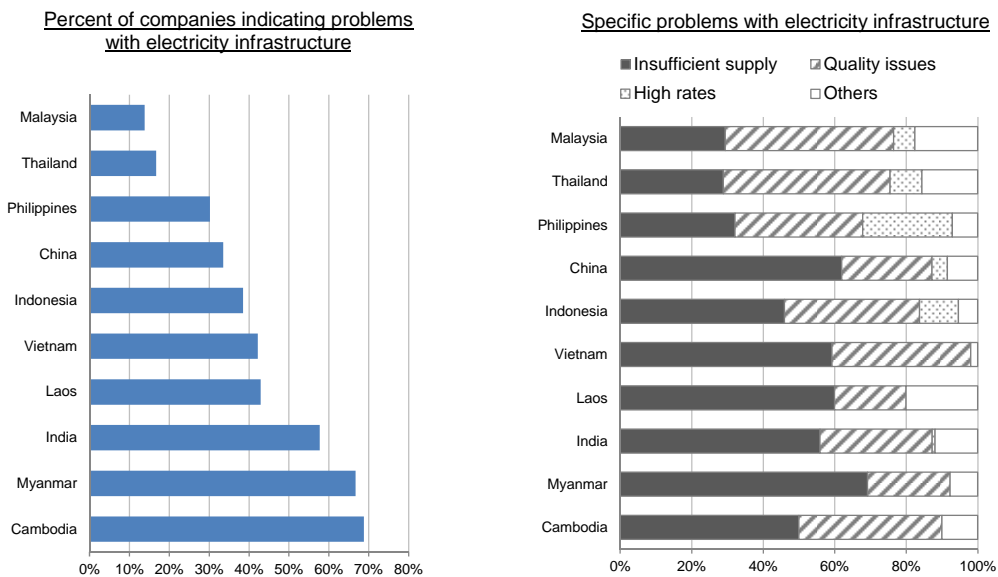
**Figure 1: State of infrastructure development in Asian nations**



Note: 1. Rankings indicated above the bar graphs are rankings among 144 countries, as of 2014.  
2. No data for Laos and Myanmar for 2006.

Source: Nomura Institute of Capital Markets Research, based on World Economic Forum's Global Competitiveness Report (annual report by the World Economic Forum)

**Figure 2: Japanese companies' evaluation of Asian nations' electricity infrastructure**



Source: Nomura Institute of Capital Markets Research, based on the Japan Bank for International Cooperation's "Survey Report on Overseas Business Operations by Japanese Manufacturing Companies—Results of the JBIC FY2013 Survey: Outlook for Japanese Foreign Direct Investment (25th Annual Survey)"

## 2. Needed infrastructure will amount to huge investment

According to a working paper<sup>5</sup> published by the Asia Development Bank Institute (ADBI) in September 2010, infrastructure development needed in the Asian region will require a total investment of around \$8.5 trillion during 2010–20 (about \$0.8 trillion per year)<sup>6</sup>. The Organisation for Economic Co-operation and Development (OECD) estimates that worldwide investment in infrastructure during this period will average about \$1.9 trillion a year<sup>7</sup>. In other words, Asia is likely to account for about 40% of global spending on infrastructure development during 2010–20.

The ADBI's estimate of the total amount of investment needed in Asia (\$8.5 trillion) is further broken down into \$8.2 trillion for national infrastructure and \$0.3 trillion for already planned cross-border, or regional, infrastructure projects. China is estimated to need the largest investment in infrastructure, at \$4.4 trillion, or 53% of the total, followed by India at \$2.2 trillion (26%), and the ASEAN countries as a group at \$1.1 trillion (13%) (Figure 3, left table). Among the ASEAN group, Indonesia has the greatest need at \$0.4 trillion (5%), which ranks it third overall. The estimated needed investment in infrastructure as a percentage of GDP is 7% for the region as a whole, 5% for China, 11% for India and 6% for Indonesia<sup>8</sup>. By infrastructure sector, the estimated needed investment is greatest for energy (electricity) at \$4.0 trillion (49% of total), followed by transportation at \$2.9 trillion (35%), and telecommunications at \$1.0 trillion (13%) (Figure 3, right table). Investment in transportation is almost entirely for roads projects, reflecting the large land area of many countries, such as China and India.

The estimated investment need for cross-border infrastructure projects is based on 1,202 identified projects as of September 2010. Total required investment (\$0.3 trillion) includes \$0.2 trillion for transportation projects (71% of total) and \$0.1 trillion for energy projects (29%), reversing the priority seen for sector investment in individual nations. This difference reflects the fact that the energy sector is regulated on a national level, complicating collaboration on energy infrastructure projects. On a regional subdivision basis, East Asia and Southeast Asia account for the great majority of expected infrastructure investment.

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<sup>5</sup> ADBI Working Paper Series, "Estimating Demand for Infrastructure in Energy, Transport, Telecommunications, Water and Sanitation in Asia and the Pacific: 2010–2020", September 2010.

<sup>6</sup> The estimate in "Infrastructure for a Seamless Asia", published jointly by the ADB and ADBI in 2009, was \$8.3 trillion, but that figure was raised to \$8.5 billion owing to changes to the countries included in the estimate and revisions to forecasts.

<sup>7</sup> OECD, "Infrastructure to 2030: Telecom, Land Transport, Water and Electricity", June 2006.

<sup>8</sup> ADBI estimates as of September 2010. We have not revised to reflect changes in the ratios caused by subsequent releases of actual GDP data for each nation.

**Figure 3: Infrastructure investment needed in Asia (2010–20)**

By nation/region				By sector		
	Investment amount (\$bn)	% of total	% of GDP		Investment amount (\$bn)	% of total
China	4,367.6	53%	5%	Energy (electricity)	4,003.3	49%
India	2,172.5	26%	11%	Transportation	2,898.9	35%
ASEAN	1,094.6	13%	-	Airports	64.3	1%
Indonesia	450.3	5%	6%	Ports	256.7	3%
Malaysia	188.1	2%	7%	Railway	35.0	0%
Thailand	172.9	2%	5%	Roads	2,543.0	31%
Philippines	127.1	2%	6%	Telecommunications	1,040.1	13%
Vietnam	109.7	1%	8%	Fixed-line phone	153.9	2%
Others	46.4	1%	-	Mobile phone	827.8	10%
Other Asian nations	587.8	7%	-	Broadband	58.4	1%
Total	8,222.5	100%	7%	Water & sanitation	280.2	3%
				Water supply	113.2	1%
				Sewerage	167.0	2%
				Total	8,222.5	100%

Note: 1. The figures above do not include investment in cross-border projects.

2. Other Asian nations include countries in Oceania.

Source: Nomura Institute of Capital Markets Research, based on Asian Development Bank Institute (ADBI) working paper

### III. Overview of infrastructure financing in Asia

#### 1. Financing of infrastructure projects

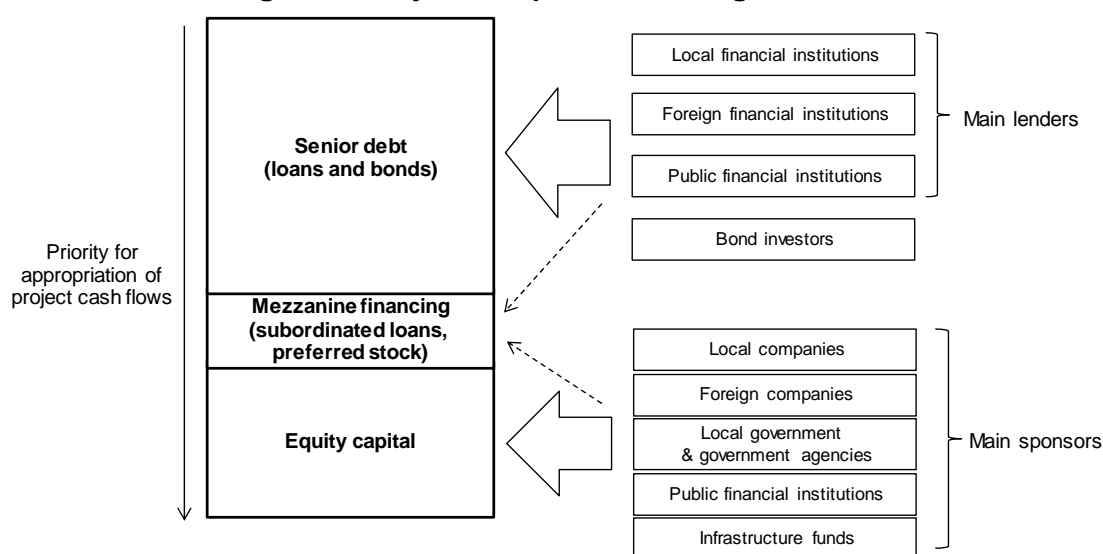
Infrastructure projects were, for a long time, financed primarily by fiscal spending by governments and government agencies, or in other words by the public sector. Since around 1990, however, infrastructure projects in Asia have increasingly been carried out using private-sector funding and technical expertise (hereafter, privatization projects). This move toward privatization was prompted by (1) the need to use private-sector funds to lighten the burden on national finances, which alone were insufficient for meeting expanding infrastructure demand, (2) the need to use private-sector technologies and knowhow in order to carry out projects more efficiently, and (3) requests from international development financial institutions financing the projects that private-sector involvement be sought.

In general, privatization projects are carried out by a project company created solely for the purpose of executing the specified project. These project companies are established as special purpose companies (SPCs). Project companies, like ordinary operating companies, are funded by a combination of equity capital and debt (Figure 4). In general, infrastructure projects involve a variety of risks (details later) and cover long periods of time, often 20–30 years or longer. Consequently, most projects are financed by multiple sponsors (providers of capital). Infrastructure project sponsors usually include local companies, overseas companies, the local national government and government agencies, public financial institutions, and infrastructure funds. Project scale varies from the tens of millions of dollars to the hundreds of millions of dollars, with some of the largest projects even requiring several billions of dollars. As such large projects cannot be financed entirely from the capital provided by sponsors, additional funding from outside lenders (loan-issuing financial institutions) is usually needed. These outside lenders are primarily local financial institutions, foreign

financial institutions, and public financial institutions. As is the case with sponsors, project financing is usually provided by more than one lender, with a number of financial institutions (mostly banks) putting together syndicated loans. Also, because revenues from most infrastructure projects are denominated in the local currency, borrowers tend to favor procuring local-currency funds to avoid currency fluctuation risks. As a result, local financial institutions generally have an advantage over foreign financial institutions.

In addition, funding through bond issuance is often seen in nations with well-developed capital markets. In general, equity capital accounts for 20–30% of a project company’s funding, with the remaining 70–80% coming from debt.

**Figure 4: Project companies’ funding sources**



Note: Diagram shows only the principal sources of direct financing for project companies.  
Source: Nomura Institute of Capital Markets Research, based on various materials

## 2. Project finance often used to procure debt financing

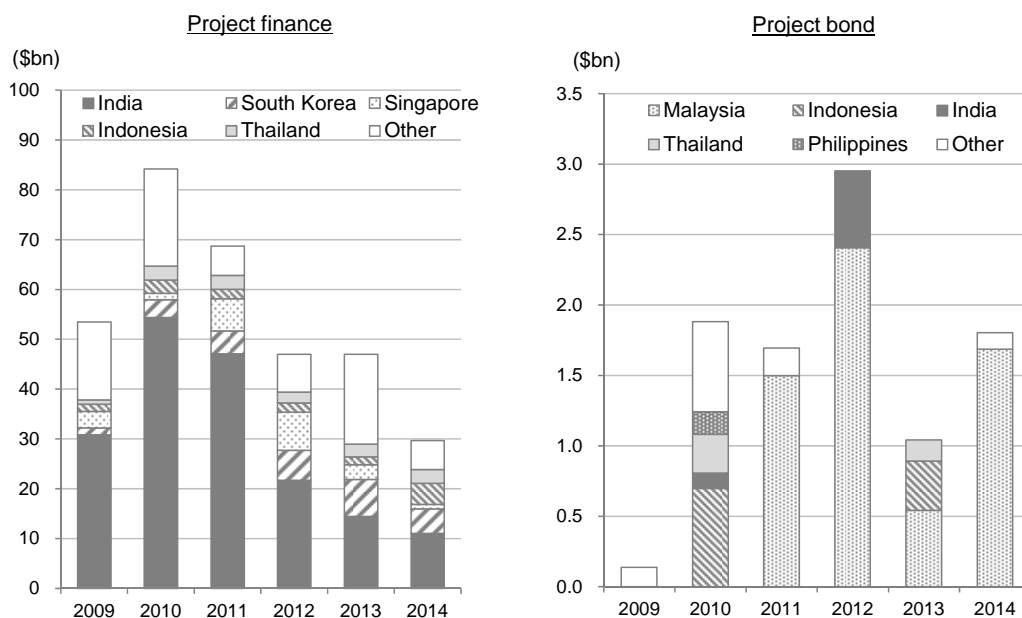
Infrastructure projects use of debt financing often takes the form of “project finance”. Project finance<sup>9</sup> is a financing method used to fund a specific project, with revenue cash flows earned from the project’s operation used to repay the debt. If the project being financed has good business prospects, project finance enables the project to procure funding in excess of the amounts that would be available based solely on its sponsors’ borrowing capabilities. For lenders, project finance schemes provide high interest rates and fees that compensate for the extra effort required to put together the scheme compared with a corporate finance deal based on the borrowing company’s creditworthiness. The main demerit of project finance schemes is the considerable amount of time it takes to put together schemes involving a large number of stakeholders. For some projects, this can take several years.

<sup>9</sup> Project finance can take the form of a loan or a bond, but in this report we limit the term’s usage to references to loans. For bond issues, we use the term “project bond”.

According to the Thomson Reuters data base, project finance funding for infrastructure projects in Asia amounted to \$47 billion in 2013 and about \$30 billion in 2014 (Figure 5, left graph). The largest recipient of project finance funding has been India. The league tables for project finance in Asia are dominated by Japan’s three megabanks, which have adopted Asia-oriented strategies, and local banks in India, China, and South Korea. U.S. and European banks had a stronger presence until the early 2000s but have been absent from the top of league tables since the Lehman shock and the European debt crisis.

Fund procurement via bond issuance makes use of “project bonds”. Instead of relying on the creditworthiness of the bond issuer, a project bond scheme uses the cash flows from project operation as the source of bond repayment. Private placements tend to be more common than public offerings because they have simpler issuance procedures and lower costs. The main investors in these bonds are pension funds, insurance companies and other institutional investors. Project bonds are often issued in markets of advanced nations, such as Australia, the United States, and European nations, as well as in the Euromarket (markets for international bonds denominated in a currency other than that of the country where the bond is issued). Issuance in Asia is limited to a few nations, such as Malaysia, indicating that the market is rather underdeveloped. According to Project Finance International data, total issuance of project bonds in Asia is rather limited at \$1–3 billion a year (Figure 5, right graph). As such, debt financing for infrastructure projects is heavily weighted toward bank loans.

**Figure 5: Project finance and project bond issuance amounts in Asia**



Note: 1. Others includes countries in Central Asia and the Pacific (excluding Australia).  
 2. Data includes financing for some non-infrastructure projects.

Source: Nomura Institute of Capital Markets Research, based on data from the Thomson One database and Project Finance International

### 3. Equity capital from infrastructure funds and mezzanine financing

Infrastructure funds participate in infrastructure projects primarily via equity capital contributions. The funds include market-listed funds and unlisted funds, with the majority being unlisted<sup>10</sup>. Most of these unlisted funds are closed-end funds that in principle cannot be sold until the fund matures. Liquidity is therefore low. The main investors in these funds are pension funds, insurance companies and other institutional investors, but the investors in more liquid listed funds also include individual investors<sup>11</sup>. One of the major reasons investors invest in infrastructure funds is the portfolio risk dispersion effect offered by the funds' assets, which have a low correlation to other asset classes, such as stocks and bonds. The creation of infrastructure funds began in earnest in the 1990s in the United Kingdom and Australia, and many large funds began to appear in other countries after 2000. However, infrastructure funds still have a rather small presence in Asia<sup>12</sup>.

Meanwhile, many infrastructure projects seek to raise leveraging by holding equity capital to a certain level and increasing debt financing. This has led to the use of mezzanine financing. Mezzanine financing is positioned between equity capital and senior debt (loans and bonds) and can take the form of subordinated loans or preferred stock. Although it offers lower returns than those expected by project sponsors, mezzanine financing is popular with financial institutions and infrastructure funds seeking greater certainty of returns on their investment. Mezzanine financing enables existing sponsors to avoid dilution of their equity interest and has a simpler process than a capital increase. For senior lenders and bond investors, mezzanine financing provides a cushion against possible losses if project operating cash flows decrease.

### 4. Infrastructure project phases and funding sources

Infrastructure projects can generally be divided into three phases: the planning stage, construction stage, and operating stage. The design and construction stages are often collectively referred to as the "greenfield phase" while the operating stage is called the "brownfield phase". Each project phase presents different risks and returns. As a result, each phase tends to attract a different group of investors (Figure 6).

Because an infrastructure project does not generate cash flow until it moves into the operating stage, funding the project during the greenfield phase involves considerable risk. As a result, during the greenfield phase, and especially in the planning stage, sponsors tend to be governments, government agencies, and private-sector enterprises, such as construction companies, that possess specialist-level knowledge of infrastructure projects. Infrastructure funds seeking high returns tend to get involved from the construction stage and then sell their interests to other investors

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<sup>10</sup> For more on infrastructure funds, see Taki, T., "Asetto kurasu to shite kakudai suru infurasutorakuchā e no tōshi (Infrastructure investment expanding as a new asset class)," Nomura Capital Markets Quarterly, Summer 2006 (Japanese only).

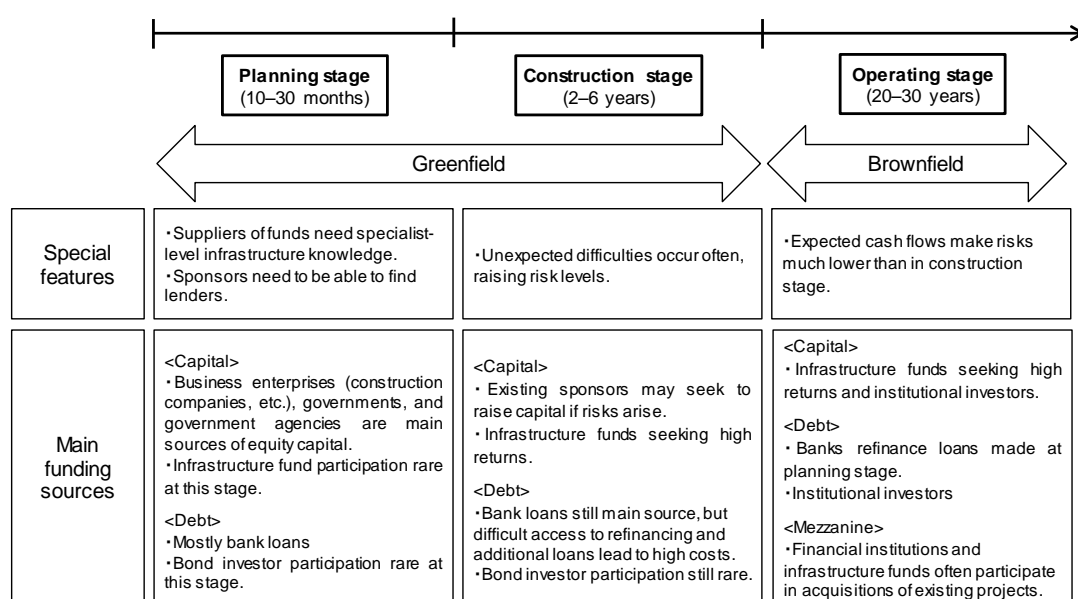
<sup>11</sup> Institutional investors well-versed in infrastructure who want to avoid management fees charged by funds will often invest directly in the infrastructure project.

<sup>12</sup> According to the "Preqin Quarterly Update: Infrastructure, Q3 2014," published by Preqin, a research firm specializing in alternative investments, unlisted infrastructure funds accounted for only about 10% of funds invested in Asian infrastructure.



during the brownfield phase. As for suppliers of debt funding, banks tend to be the main lenders to infrastructure projects during the greenfield phase, when participation by bond investors is rare. The lack of participation from bond investors in the early stages is due to (1) the low risk tolerance of pension funds, insurance companies and the other institutional investors that focus on bond investments and (2) the tendency to avoid bond issuance in early project stages when problems often require debt restructuring, which is a more difficult process with bonds than bank loans, in part because of the need to gain the approval of many investors. The brownfield phase tends to see more participation from bond investors and the use of mezzanine financing for the acquisition of existing projects.

**Figure 6: Special features and main funding sources for each project phase**



Source: Nomura Institute of Capital Markets Research, based on various materials

## 5. Public financial institutions support private-sector financial institutions in various forms

Public financial institutions play a major role in infrastructure finance. Public financial institutions can broadly be divided into multilateral development banks (MDBs) and the government financial institutions (GFIs) of individual nations. The main MDBs in Asia are the World Bank Group and the Asia Development Bank (ADB). The World Bank Group is composed of several financial institutions, including the World Bank<sup>13</sup>, which focuses on developing nations; the International Finance Corporation (IFC), which provides funding to the private sector; and the Multilateral Investment Guarantee Agency (MIGA) (Figure 7). The IFC provides loans (including mezzanine financing), equity financing, loan guarantees (partial

<sup>13</sup> World Bank is a general term used to refer collectively to the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA).

credit guarantees) and advisory services. Its lending operation is focusing on local currency-denominated loans. MIGA offers political risk insurance (details later).

Unlike the World Bank Group, the ADB is a financial institution dedicated to Asia and the Pacific region. It possesses the same functions as the World Bank and provides financing to both the public and private sectors. Like the IFC, the ADB issues loans denominated in local currencies. In Strategy 2020<sup>14</sup>, the long-term strategic framework announced in April 2008, the ADB positions support for infrastructure development as one of its core operations and says it will strengthen support for the private sector. Specifically, the ADB targets expansion of its loans to private-sector borrowers to 50% of its overall loan portfolio by 2020.

Because MDBs have budgetary constraints and also because mobilization of private-sector funds for development purposes is one of their primary goals, they promote co-financing with private-sector financial institutions. For example, the IFC and ADB in principle both limit their support for individual project financings to 25% of the project's total cost. Both institutions see their role as pump primers that open the gates to greater funding from the private sector. The MDBs themselves provide a small proportion of the total funds needed, and they never assume the position of largest provider of funds. To promote projects carried out by public-private partnerships (PPPs), the MDBs also engage in transaction advisory services that help national governments and government agencies navigate through complicated project procedures and seek needed financing.

Many nations have government-related financial institutions (GFIs) that support infrastructure exports and overseas infrastructure projects undertaken by companies in their own country. Such institutions in Japan, China, and South Korea have a particularly strong presence in Asian infrastructure projects. China and South Korea are often said to have emulated Japan's system model for GFIs, and therefore the three nations' GFIs and their operations are similar (Figure 7). More specifically, all three nations have (1) an export-import bank<sup>15</sup> to support exports and investments in other countries by domestic companies, (2) a development bank<sup>16</sup> that is primarily focused on supporting domestic development but also supports some overseas development projects, (3) an insurance institution that provides insurance for domestic companies' exports and foreign investments, and (4) an aid agency<sup>17</sup> that provides official development assistance (ODA) primarily to foreign governments and government agencies. In Japan's case, for example, the Japan Bank for International Cooperation

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<sup>14</sup> <http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=2148495>

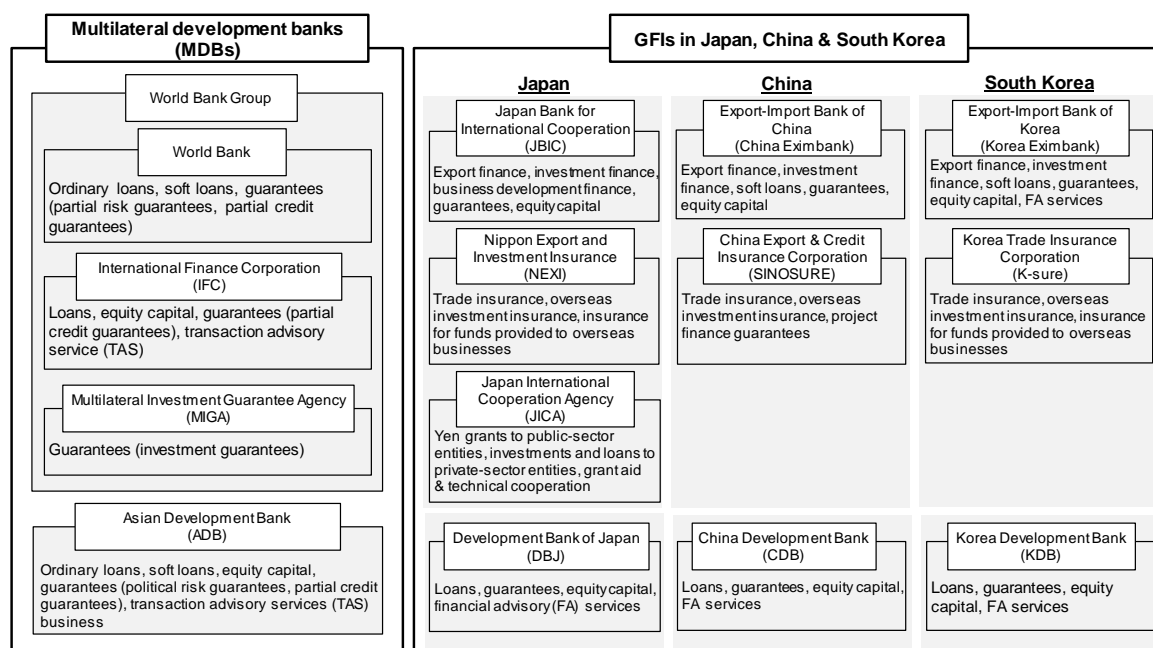
<sup>15</sup> Japan Bank for International Cooperation (JBIC) was originally established as the Export-Import Bank of Japan (JEXIM) but the name was changed in line with an organizational restructuring in 1999.

<sup>16</sup> The Development Bank of Japan (DBJ) was originally established as the Japan Development Bank but the name was changed in line with an organizational restructuring in 1999.

<sup>17</sup> China and South Korea do not have independent aid agencies, and the export-import banks of both countries carry out the aid-related finance business. Japan's aid agency, the Japan International Cooperation Agency (JICA), restarted investment and lending operations in support of overseas private-sector business in 2012, in addition to continuing its support of the public sector.

(JBIC) supports exports by Japanese companies by engaging in co-lending with private-sector financial institutions in principle as a supplement to private institutions. Nippon Export and Investment Insurance (NEXI) shares the risks taken by private-sector Japanese banks by insuring the loans they extend for overseas projects.

**Figure 7: MDBs in Asia and GFIs in Japan, China, and South Korea**



Source: Nomura Institute of Capital Markets Research, based on Kaga R., *Jissen Aja no infura bijinesu* (Infrastructure Business in Asia), Nippon Hyoron Sha Co., Ltd. (Japanese only)

## IV. Need for more funding from the private sector

### 1. Infrastructure project risks

It is difficult to get an accurate grasp of the overall scale of Asia’s infrastructure market because of the lack of official statistics. However, it is safe to say that the current levels of government funding, ODA from advanced nations<sup>18</sup>, support from MDBs, and procurement of funding from the private-sector will not cover the cost of infrastructure investment needed in Asia (\$0.8 trillion per year). Given public-sector budgetary constraints, we cannot expect a large increase in funding from this sector. Consequently, greater funding from the private sector will be essential to covering this gap in current infrastructure funding sources and needed funds.

To date, private-sector funding of Asian infrastructure projects has been insufficient, not because of illiquidity of global funding sources but rather because of the large number of projects with low business potential. Consequently, systems that increase projects’ business potential need to be developed to raise the appeal of these

<sup>18</sup> According to the OECD in “Geographical Distribution of Financial Flows to Developing Countries—2014 Edition” (April 2014), ODA for infrastructure projects in the Asia-Pacific region totaled about \$20 billion in 2012.

projects to private-sector funding sources. One particularly important need is a framework for public-private sector sharing of the various risks inherent in infrastructure projects. These risks include (1) political risk, i.e., the risk that the policies or actions of governments and government agencies could affect a project, (2) business risk, or the risk that business activities by a project participant could affect a project, and (3) natural disaster risk, i.e., the risk that natural disasters could negatively affect a project. For example, political risks include revisions of laws related to the project and the revocation of necessary approvals or licenses. Business risks include the inability to acquire the land needed for a project and the failure to complete the project as planned (Figure 8).

The project risks are greater in Asia than in advanced nations because Asian nations generally have unstable political and economic situations. Private-sector project participants have difficulty controlling these project risks on their own. Therefore, it is necessary to create a risk-sharing framework under which both the public and private sectors shoulder an appropriate share of the risk burden. While it is natural to assume that political risks should be borne by the public sector and business risk by the private sector, in Asia this obvious risk-sharing split is not always realized.

**Figure 8: Infrastructure project risks**

Risk category	Main risks
Political risks	Risk that local currency authority will restrict foreign exchange transactions
	Risk that legislation related to the project's business will be changed or that needed licenses will be revoked
	Risk that project assets will be seized by the local government
	Risk of terrorism, riots, war, etc.
	Risk that the local government and government agencies do not fulfill obligations stipulated in the project contract
Business risks	Risk that funding cannot be procured as planned
	Risk that land required for the project cannot be acquired as planned
	Risk that project operation does not proceed as planned owing to insufficient capabilities of the operating company
	Risk that the project is not completed as planned
	Risk of insufficient operating revenues owing to demand for project's service falling short of initial forecast
Natural disaster risks	Risk of earthquakes, typhoons, floods, tsunamis or other natural disasters

Source: Nomura Institute of Capital Markets Research, based on various materials

## 2. Promotion of public-private partnerships (PPPs)

As earlier noted, privatization projects have been used in Asia since the early 1990s. However, detailed project guidelines, including public-private risk sharing arrangements, had to be determined individually for each project by the passage of new or revised legislation, because the public-private partnership (PPP) system was not used in Asia until more recently. PPPs are based on the concept that cooperation between the public and private sectors will lead to more efficient and effective provision of public services. The first PPPs were formed in the United Kingdom in the

1990s, and their use has since spread rapidly around the globe. PPPs can take one of a number of structures, including (1) a private finance initiative (PFI) under which a public facility is constructed and then operated using private-sector funds, management skills, and technical capabilities; (2) a build-own-transfer (BOT) scheme under which a private enterprise builds, owns and operates a facility for a certain period of time and then transfers the facility to the public sector, and (3) a concession arrangement under which a private enterprise obtains certain business operating rights (concession) from the public sector, constructs a facility, and operates the related business for a certain period of time.

In Asia, PPP system development varies from country to country, but the overall trend shows gradual progress in several areas, including (1) standardization of project-related rights, including risk sharing between the public and private sectors and the content of policies regarding government support, (2) the establishment of agencies responsible for PPPs, and (3) clarification of bidding procedures for prospective project operating companies (Figure 9). The nations that have made the most progress in developing their PPP frameworks are India, South Korea and the Philippines. For example, to raise the business potential of its infrastructure projects, India introduced in 2005 a viability gap funding (VGF) system that provides subsidies for up to 20% of a project's overall costs. South Korea in 2009 introduced a system of government guarantees of project companies' returns on investment (i.e., guarantee of a return equal to the yield on government bonds). The Philippines has introduced a system of incentives that includes (1) subsidies for up to 50% of a project's cost to deflect potential political risk from government restrictions, (2) guarantees against a supplier's failure to fulfill contracted obligations to the project company, and (3) various other grants and subsidies.

A good example of a recent Asian infrastructure project that has received the support of the local national government is a geothermal plant project in Indonesia that has attracted the participation of Japanese companies and financial institutions<sup>19</sup>. The project company, with equity capital from Itochu Corporation (25%), Kyushu Electric Power Co. (25%) and other investors, will build and operate a geothermal power plant in the Sarulla region of North Sumatra Province. The electricity generated by this plant will be sold to a state-owned electric power company for 30 years (electricity sales contract concluded in April 2013). Project funds, totaling \$1.17 billion, have been procured through project finance provided by JBIC, ADB, and six private-sector banks (Mizuho Bank, Sumitomo Mitsui Banking Corporation, Bank of Tokyo-Mitsubishi UFJ, Société Générale Bank, ING Bank, and National Australia Bank). JBIC also provides political risk guarantee for the portion financed by the private financial institutions. In addition, the Indonesian government has guaranteed the state-owned electric power company's payment obligations under the electricity sales contract with the project company.

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<sup>19</sup> <http://www.jbic.go.jp/en/information/press/press-2013/0331-19625>

**Figure 9: State of PPP framework development in Asian nations**

Country	Overview of PPP framework
India	<ul style="list-style-type: none"> <li>• No central government legislation governing PPPs, but states have established related laws in line with national guidelines.</li> <li>• System for viability gap funding to increase projects' business potential in use since 2005.</li> <li>• In 2011, central government announced new policy targeting standardization of PPP procedures and more concrete project support from the government.</li> <li>• Finance ministry's established PPP Cell in its Economic Affairs Dept. to assume responsibility for central government's contribution to PPPs.</li> </ul>
Indonesia	<ul style="list-style-type: none"> <li>• Established legislation governing PPPs in 2005. Ministries responsible for PPPs are the Ministry of National Development (Bappenas) and the Investment Coordinating Board (BKPM).</li> <li>• Established Indonesia Infrastructure Guarantee Fund (IIGF) in 2009 to provide government guarantees (against political risks, etc.)</li> <li>• Established Sarana Multi Infrastruktur (SMI) in 2009 as a public company providing infrastructure financing via equity capital and loans (including mezzanine financing). SMI in turn established Indonesia Infrastructure Finance in 2010 as joint venture with MDBs.</li> <li>• Passed land procurement law in 2012 to support land acquisition by infrastructure project companies.</li> </ul>
South Korea	<ul style="list-style-type: none"> <li>• Passed legislature governing PPPs in 1994 (revised several times since).</li> <li>• Introduced in 2009 government guarantee of minimum return on infrastructure investments by project operating companies.</li> <li>• Government agencies responsible for PPPs include the Ministry of Strategy and Finance, the Private Investment Project Committee, and Public and Private Infrastructure Investment Management Center.</li> </ul>
Singapore	<ul style="list-style-type: none"> <li>• PPPs governed by general laws, with no specific PPP-related legislature. Also, does not have any specific agency handling PPPs; leaving responsibility for domestic coordination with the finance ministry.</li> <li>• Finance ministry established PPP advisory council in 2004 and published handbook on PPP formation methods and bidding procedures (revised in 2012)</li> </ul>
Thailand	<ul style="list-style-type: none"> <li>• Established law governing privatization projects in 1992 and implemented new law governing PPPs in 2013. New law has increased transparency of PPP-related processes, including bidding procedures for prospective operating companies.</li> <li>• Government agencies responsible for PPPs include finance ministry's Public Debt Management Office (PDMO) and National Economic and Social Development Board (NESDB).</li> </ul>
China	<ul style="list-style-type: none"> <li>• Started privatization projects as early as 1984 but regulates PPP projects at the national and local levels.</li> <li>• Established law governing BOTs in 1995 but has no unified comprehensive legislature governing PPPs nationwide.</li> <li>• No central government agency providing support for PPPs, but National Development and Reform Commission has regulatory authority.</li> </ul>
Philippines	<ul style="list-style-type: none"> <li>• BOT law established in 1990 (revised in 1994) provides legal framework for PPPs.</li> <li>• Introduced system of incentives to compensate for regulatory risk; incentives include bearing part of project costs, credit enhancement, and subsidies.</li> <li>• In 2010, established PPP Center under the National Economic and Development Authority to handle PPP matters.</li> </ul>
Vietnam	<ul style="list-style-type: none"> <li>• Established legislation governing BOTs in 1993. In 2010, implemented legislation including important regulations for government guarantees.</li> <li>• In 2011, established detailed regulations for PPP pilot projects scheduled to start in 3-5 years.</li> <li>• Ministry of Planning &amp; Investment is responsible for PPP matters, including coordinating among agencies, technical support, capability development, and drafting of relevant legislation.</li> </ul>
Hong Kong	<ul style="list-style-type: none"> <li>• PPPs governed by general laws, with no specific PPP-related legislature.</li> <li>• The Efficiency Unit, under the direction of the HK government's Chief Secretary for Administration, provides advice and information to HK government on PPPs.</li> <li>• The Efficiency Unit issued a guide on PPP merits and caution points in 2003 (revised in 2008).</li> </ul>
Malaysia	<ul style="list-style-type: none"> <li>• Malaysia's PPP history dates back to 1981, yet it has not established any specific laws governing PPPs.</li> <li>• In 2009, the Public Private Partnership Unit was set up in the prime minister's office and drafted guidelines related to PPPs.</li> <li>• In 2010, established the Facilitation Fund (20 billion ringgits) to support land acquisition by PPP project companies.</li> </ul>

Source: Nomura Institute of Capital Markets Research, based on Allen & Overy, "Asia Pacific Guide to Public-Private Partnerships" and other reference materials

In recent years, APEC (Asia-Pacific Economic Cooperation) has taken up the discussion of regional infrastructure development and, in particular, the promotion of PPPs. According to the Joint Ministerial Statement<sup>20</sup> from the 21st APEC Finance

<sup>20</sup> [http://www.mof.go.jp/english/international\\_policy/convention/apec/20141021.htm](http://www.mof.go.jp/english/international_policy/convention/apec/20141021.htm)

Ministers' Meeting held in Beijing on 21–22 October 2014, an implementation roadmap for the promotion of successful infrastructure PPP projects in the APEC region has been drafted based on a compilation of PPP case studies that was prepared with support from international organizations. The compilation of PPP case studies includes examples of unsuccessful PPPs as well as successful ones, which we believe is important to creating the awareness that PPPs are not the solutions to every situation. The examples of failed PPPs begin with a large London subway PPP project<sup>21</sup> in the United Kingdom, the birthplace of PPPs, and include an assortment of other failures in other advanced nations. APEC's focus on PPPs raises expectations for further development of the PPP framework in Asian nations and the eventual implementation of more PPP projects.

## V. Future prospects

### 1. Establishment of several new infrastructure support organizations

In recent years, we have seen the establishment of several new institutions and frameworks to provide financial support for infrastructure development. In addition to the AIIB mentioned at the top of this report, the New Development Bank (NDB) was established in July 2014 by the BRICS countries (Brazil, Russia, India, China, and South Africa). In October 2014, the World Bank Group announced the creation of the Global Infrastructure Facility (GIF). Going back a bit further, the ASEAN Infrastructure Fund (AIF) was established in 2012 to support financing of infrastructure projects in the ASEAN region (overviews of each of these institutions is provided below). The existence of many infrastructure support institutions creates a competitive environment that works to borrowers' advantage. However, to avoid confusion and realize more efficient financing, these institutions need to establish an orderly co-existence, for example by clearly clarifying their individual focus areas, and then create close ties that promote cooperation and coordination of their financing activities.

#### ● Asian Infrastructure Investment Bank (AIIB)

As noted at the top of this report, the AIIB has yet to announce a concrete business plan. The bank's eventual capital base of \$100 billion is substantial but far short of the region's total estimated demand for infrastructure funding in coming years.

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<sup>21</sup> This PPP project to renovate and improve the superannuated infrastructure of the London Underground began in 2003. The PPP entailed an upstream/downstream split of responsibilities between the project's private-sector companies and the public sector authority responsible for the London Underground. The private-sector companies were responsible for downstream tasks, such as the maintenance and upgrading of railway lines, cars and signals, while the public-sector authority remained responsible for upstream operation of the subway system. The contracted period was for 30 years but the arrangement was discontinued in 2010 after one of the private-sector companies failed because it could not secure profits from the project.

Consequently, if the AIIB acts alone, the benefits to Asian nations will be rather limited. The existing MDBs providing financing to Asian nations, i.e. the World Bank Group and the ADB, are engaged in a diverse range of activities focused on priming the pump for further funding from the private sector. These activities include cooperative loans with private-sector financial institutions, guarantees of loans extended by private banks, provision of higher-risk equity capital and mezzanine financing, and advisory services offered to national governments in order to promote PPP projects. The markets are waiting to see if the AIIB will engage in similar activities.

- **New Development Bank (NDB)**

The NDB was established by the five BRICS nations on 15 July 2014<sup>22</sup>. The bank was established to support infrastructure and sustainable development projects in the BRICS nations and other emerging countries. The NDB cooperates with MDBs, private-sector financial institutions and public-sector institutions, primarily GFIs, to support public and private projects through the provision of loans, guarantees, and equity capital. The bank was established with initial subscribed capital of \$50 billion and initial authorized capital of \$100 billion. The initial subscribed capital was equally distributed among the founding members (\$10 billion each). The NDB is headquartered in Shanghai and plans to open a branch office in Johannesburg. Membership is also open to non-BRICS countries that are members of the United Nations and meet certain other conditions as determined by the bank's Board of Governors.

- **Global Infrastructure Facility (GIF)**

The World Bank Group announced the creation of the GIF on 9 October 2014<sup>23</sup>. The GIF is a public-private platform created to promote infrastructure investment in emerging countries, including those in Asia. The GIF partners with governments, MDBs and private-sector financial institutions to provide financial support for large, complex, high-risk infrastructure projects. The World Bank plans to conclude partnership agreements<sup>24</sup> by February 2015 and begin operations in March. The GIF's first three years will be a pilot phase for testing the GIF concept, activities and business models.

- **ASEAN Infrastructure Fund (AIF)**

The AIF was established in April 2012 with capital from the ASEAN nations and the ADB. It became fully operational in 2013<sup>25</sup>. The AIF's initial capital of \$490 million consists of \$340 million from the ASEAN countries and \$150 million from the ADB. The AIF specializes in lending. Its fundamental policy is to participate in cooperative financings with the ADB, with a target funding ratio of 30% from the AIF

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<sup>22</sup> <http://brics6.itamaraty.gov.br/media2/press-releases/219-agreement-on-the-new-development-bank-fortaleza-july-15>

<sup>23</sup> <http://www.worldbank.org/en/news/press-release/2014/10/09/world-bank-group-launches-new-global-infrastructure-facility>

<sup>24</sup> Bank of Tokyo-Mitsubishi UFJ held a signing ceremony with the World Bank Group on 9 January 2015 to announce its participation in the GIF.

<sup>25</sup> <http://www.adb.org/site/aif/overview>



and the remaining 70% from the ADB. In principle, the AIF will not issue loans independently. AIF loans are targeted at collaborative projects among ASEAN nations and projects that support PPPs. At present, the AIF is focused on loans to governmental projects in the region, but it plans to increase lending to private-sector projects to about 10% of total outstanding loans by 2017. According to an ADB press release dated 18 December 2014<sup>26</sup>, the AIF had issued loans totaling \$165 million to three infrastructure projects and had approved a strong pipeline of prospective projects for 2015.

## 2. Potential for expansion of project bond market

As noted earlier in this report, project finance is the main method for raising funds for privatization projects. However, this funding source may become subject to tighter restrictions as capital adequacy regulations for banks are strengthened. Long-term financings, such as project finance, weigh heavily on bank balance sheets. The full implementation of the Basel III regime<sup>27</sup> in 2019 is expected to make it difficult for internationally active banks, such as Japan's three mega banking groups, to expand long-term financing of Asian infrastructure projects.

Under such circumstances, project bonds could play a more important role in infrastructure financing in Asia. At present, outstanding project bond issuance in Asia is much lower than the amount of funds raised through project finance. The main reason for this discrepancy is the insufficiently developed bond markets in Asian countries. However, the Asian Bond Markets Initiative (ABMI) launched in 2003 is contributing to the development of local-currency bond market infrastructure and systems in Asia and, as a result, the outstanding issuance of government and corporate bonds has risen steadily in recent years<sup>28</sup>. In addition to its initiative to develop and promote infrastructure development bonds, the ABMI is evidently considering guarantees for project bonds under its Credit Guarantee and Investment Facility (CGIF)<sup>29</sup>. The ADB has been guaranteeing project bonds issued in India since 2012 and in cooperation with the India Infrastructure Finance Company Limited has established a credit enhancement facility for rupiah-denominated bonds. Going forward, initiatives such as these could lead to increased issuance of project bonds.

Meanwhile, Malaysia is unusual among Asian countries for its relatively robust project bond market. Malaysia's leadership in this area is due to its development of an Islamic financial market. Islamic finance must abide by Islamic law, which forbids the charging of interest. Islamic financings therefore are based on the concept that borrower and lender share in the transaction's risk and returns based on the actual

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<sup>26</sup> <http://www.adb.org/news/myanmar-becomes-full-member-asean-infrastructure-fund>

<sup>27</sup> The Bank for International Settlements (BIS) is transitioning from its Basel II framework for bank capital requirements to Basel III, which includes strengthens the capital requirements for banks conducting business in international markets.

<sup>28</sup> For more information about the ABMI, see Kitano, Y., Development of Asian Local Currency Bond Markets and Remaining Challenges, *Nomura Journal of Capital Markets*, Winter 2015.

<sup>29</sup> "Third time lucky for project bonds?", *The Asset Magazine*, 8 May 2014

business and assets realized as a result of the financial transaction. Islamic financial transactions can be seen in countries other than Malaysia. A recent example is the first sovereign sukuk (Islamic bond) issued by Hong Kong, a non-Islamic entity<sup>30</sup>. If this trend spreads to other Asian countries, it could contribute to expansion of the project bond market.

### **3. Recent infrastructure finance–related initiatives in Japan**

The Abe government’s Japan Revitalization Strategy announced on 14 June 2013 calls for the implementation of the Infrastructure Systems Export Strategy, which aims to support domestic economic growth by leveraging Japan’s technologies and know-how to the maximum to capture a larger share of the huge global demand for infrastructure. As part of that strategy, Japan is strengthening and expanding the support tools of its public financial institutions, such as JBIC, NEXI, and the Japan International Cooperation Agency (JICA). For example, the Japanese government is strengthening local currency–denominated financing provided by JBIC and JICA. Such initiatives are expected to promote the participation of Japanese companies in PPP projects in Asia.

On the private-sector side, the Japan Exchange Group (JPX, operator of the Tokyo Stock Exchange) established a listed infrastructure market on 30 April 2015. This initiative will not only stimulate Tokyo’s financial and capital markets but is also likely to promote investment by Japanese investors, including individuals, in Asian infrastructure.

Infrastructure development in Asia will support strong economic growth in the region over the longer term. It also has the potential to contribute to further development of Japan’s economy. We therefore think the trends in infrastructure finance in Asia will continue to attract the interest of market participants.

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<sup>30</sup> For more information on Hong Kong’s sovereign sukuk, see Lackman, B.G., *Kakudai suru soburin sukūku (Isuramu kokusai) - Igirisu to Honkon no hakkō jirei (Expanding issuance of sovereign sukuku (Islamic bonds) – recent issues by UK and Hong Kong)*, Capital Market Quarterly, Autumn 2014 (Japanese only).