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Working Paper

Financing development cooperation in Northeast Asia

ADB Working Paper, No. 407

Provided in Cooperation with:

Asian Development Bank Institute (ADBI), Tokyo

Suggested Citation: Kawai, Masahiro (2013) : Financing development cooperation in Northeast Asia, ADB Working Paper, No. 407, Asian Development Bank Institute (ADBI), Tokyo

This Version is available at:

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ADB Working Paper Series

**Financing Development
Cooperation in Northeast Asia**

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No. 407
February 2013

Asian Development Bank Institute

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This is a significantly revised and expanded version of a paper presented to the Track-2 Meeting on Northeast Asian Cooperation organized by the Ministry of Foreign Affairs, Government of Japan in Tokyo on 24 July 2012. The author is grateful to Gerd Drosesse, Arjun Goswami, and Rajat Nag for useful comments on earlier versions.

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Suggested citation:

Kawai, M. 2013. Financing Development Cooperation in Northeast Asia. ADBI Working Paper 407. Tokyo: Asian Development Bank Institute. Available: <http://www.adbi.org/working-paper/2013/02/15/5521.financing.dev.cooperation.northeast.asia/>

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Abstract

This paper examines financing mechanisms to support infrastructure development and connectivity in Northeast Asia—comprising the Northeastern People’s Republic of China, Japan, the Democratic People’s Republic of Korea (DPRK), the Republic of Korea, Mongolia, and the Russian Far East. Although this subregion has developed the Greater Tumen Initiative, the extent of intergovernmental cooperation for cross-border infrastructure investment is not as strong as in other subregional cooperation programs in Asia, such as the Greater Mekong Subregion Program and the Central Asia Regional Economic Cooperation Program. Using various previously published estimates, this paper finds that the total infrastructure investment needs for the subregion excluding Japan and the Republic of Korea (in transport, energy, information and communication technology, and the environment) could be in the order of \$63 billion per year over the next 10 years, and of this total governments in the subregion will have to mobilize external funding of \$13 billion a year, focusing on national infrastructure projects in the DPRK and Mongolia and high-priority cross-border projects in Northeast Asia. The paper considers three options as a cooperative financing mechanism for the subregion: special and/or trust funds set up in the existing multilateral development banks (MDBs), a structured infrastructure investment fund supported by MDB(s), and a new subregional multilateral development bank. Then it suggests that the Northeast Asian governments may begin with setting up special and/or trust funds at the existing MDBs and move to creating an infrastructure investment fund, following the good example of the Association of Southeast Asian Nations Infrastructure Fund, once sufficient confidence and trust is built and the DPRK returns to the international community. The paper recommends against the establishment of a new development bank in the subregion.

JEL Classification: F15, F36, F55, O19, Q01

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1. INTRODUCTION

Asia's economic interdependence through trade, investment, and finance has risen over the last few decades. Given the current economic and financial risks in Europe and the United States (US), the role of dynamic Asian economies in sustaining global growth has become even more critical.

As an important subregion in Asia, Northeast Asia—comprising the Northeastern People's Republic of China (PRC), Japan, the Democratic People's Republic of Korea (DPRK), the Republic of Korea, Mongolia, and the Russian Far East—is key to Asia's success in contributing to global prosperity and stability.¹ The subregion's major political challenge is to maintain peace and security in the Korean peninsula and manage the territorial disputes among some countries, while pursuing economic cooperation to promote growth and development, trade and investment integration, physical connectivity, energy security, and environmental sustainability.

The Asian Development Bank (ADB) has been supporting several subregional programs in various parts of Asia, such as the Greater Mekong Subregion (GMS) Economic Cooperation Program, the Central Asia Regional Economic Cooperation (CAREC) Program, the South Asia Subregional Economic Cooperation (SASEC) Program, and the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC). These subregional programs—focusing on infrastructure connectivity, trade facilitation, energy, and environmental sustainability—have delivered tangible benefits, economically and politically. The core of these programs is cross-border infrastructure cooperation, where ADB plays a secretariat or supporting role in designing and implementing the programs.

There are several reasons for increasing infrastructure investment in Asia (ADB and Asian Development Bank Institute [ADBI] 2009). First, investing in infrastructure will enhance competitiveness and productivity, and help to sustain medium- to long-term growth. Second, it will help to raise standards of living and narrow the development gap by connecting isolated (e.g., landlocked) countries, areas, and people to major economic centers. Third, it promotes environmental sustainability and social inclusion if designed properly. Last, infrastructure helps to stimulate aggregate demand and help rebalance growth away from external demand in the US and Europe toward Asia's demand.

In addition, cross-border infrastructure—in transport, electricity and power, and telecommunications—can strengthen connectivity across countries and create large economic benefits for countries involved. The larger the geographical area to be connected, the greater is the benefit due to network externalities. However, in general governments tend to be reluctant to finance cross-border infrastructure projects using their own resources. The reason is that these projects are often viewed as unduly benefiting the neighboring countries when the latter do not adequately invest in the shared projects. The consequence is that governments tend to under-invest in cross-border infrastructure and, as a result, limit cross-border connectivity. This suggests the potential benefit of intergovernmental coordination and cooperation to jointly develop and invest in subregional cross-border infrastructure projects.

This paper explores the possibility of greater subregional development cooperation in Northeast Asia so that the subregion's governments can nurture better political relations and mutual trust

¹ The Northeast PRC includes Liaoning Province, Jilin Province, Heilongjiang Province, and Inner Mongolian Autonomous Region. The Russian Far East includes Sakha (Yakutia) Republic, Kamchatka Oblast with Koryak Autonomous Okrug, Primorsky Krai, Khabarovsk Krai, Amur Oblast, Magadan Oblast, Sakhalin Oblast, Jewish Autonomous Oblast, and Chukotka Autonomous Okrug.

among them, jointly design and undertake cross-border infrastructure investment, and maintain growth momentum in a stable manner. It attempts to draw lessons from other parts of Asia for development cooperation and financing, particularly the lessons from the Association of Southeast Asian Nations (ASEAN) Infrastructure Fund (AIF) and several subregional economic cooperation programs, with the view to mobilize Northeast Asia's abundant savings and international funds for infrastructure investment in the subregion.

The paper is organized as follows. Section 2 discusses the potential for infrastructure investment development and cooperation in Northeast Asia, where complementarity across countries has not been adequately exploited. Section 3 attempts to draw lessons from subregional cooperation programs in the rest of Asia for Northeast Asia's infrastructure cooperation. Section 4 examines three options for financing infrastructure investment in Northeast Asia—creating special and/or trust funds in the existing multilateral development banks (MDBs), a subregional infrastructure investment fund supported by MDB(s), and a subregional multilateral development bank—and argues that the Northeast Asian governments may start with setting up special and/or trust funds and then move to creating a well-structured infrastructure investment fund, similar to the AIF, but not another multilateral development bank. Section 5 recommends a cooperative framework for infrastructure development and connectivity in Northeast Asia that includes a Northeast Asian infrastructure forum and a Northeast Asian infrastructure fund. Section 6 concludes the paper.

2. POTENTIAL FOR INFRASTRUCTURE DEVELOPMENT AND COOPERATION IN NORTHEAST ASIA

2.1 Economic Characteristics of Northeast Asia

Diversity in Development Stages

Northeast Asian economies are diverse not only in political systems but also in economic characteristics—economic size, population, industrial structure, openness, and stage of economic development (Table 1). Japan and the Republic of Korea are advanced economies with membership of the Organisation for Economic Co-operation and Development (OECD), while the PRC, the DPRK, Mongolia, and the Russian Federation are emerging and/or transition economies. Mongolia is the most open Northeast Asian economy in trade and inward foreign direct investment (FDI), while the DPRK is a highly controlled, closed economy without a functioning market system. The DPRK has yet to join the global institutions—such as the International Monetary Fund (IMF), the World Bank, and the World Trade Organization (WTO)—as well as regional institutions such as ADB.

Table 1: Key Economic Indicators of Northeast Asian Countries, 2011

Country/Area	GDP (\$ billion)	POP (million)	GDP/ POP (\$)	Inv/ GDP (%)	Sav/ GDP (%)	Industrial Structure			Exp/ GDP (%)	Imp/ GDP (%)	FDI/ GDP (%)
						Agr (%)	Ind [Man] (%)	Serv (%)			
PRC	7,301.1	1,347.4	5,432	45.5	52.5	10.1	46.8[29.6]	43.1	26.0	23.9	10.1
Northeast PRC	919.2	134.5	6,835	--	--	10.4	54.2[---]	35.2	8.5	9.8	13.9
Japan	5,867.2	127.8	45,903	20.7	19.0	1.2	27.4[19.5]	71.5	15.2	16.1	3.9
DPRK	29.3	24.3	1,204	--	--	23.1	36.5[21.9]	40.1	12.7	14.8	12.0
Republic of Korea	1,116.2	49.8	22,424	27.4	31.7	2.4	33.6[28.1]	64.0	56.2	54.1	11.8
Mongolia	8.6	2.8	3,056	48.6	35.8	15.3	36.3[8.3]	48.3	63.5	86.1	110.4
Russian Federation	1,858.9	142.9	13,012	23.2	30.9	4.0	36.7[16.4]	59.3	27.8	16.5	24.8
Russian Far East	84.4	6.3	13,487	--	--	--	--[---]	--	29.4	10.9	10.5

Agr = agriculture, DPRK = Democratic People’s Republic of Korea, Exp = exports, FDI = foreign direct investment (stock), GDP = gross domestic product, Imp = imports, Ind = industry, Inv = investment, Man = manufacturing, POP = population, PRC = People’s Republic of China, Sav = savings, Serv = services.

Notes:

1. The manufacturing share data for the PRC are for 2010. The industrial structure share data for Japan and the Russian Federation are for 2010. The FDI/GDP data for the DPRK are for 2010.
2. The GDP data for the Northeast PRC and the FDI/GDP data for the Northeast PRC and the Russian Far East are estimated using the IMF and ERINA data.
3. The GDP data for the DPRK are gross national income (GNI) estimates made by the Bank of Korea.

Sources: International Monetary Fund (IMF), *World Economic Outlook Database*, October 2012; World Bank, *World Development Indicators*, 2012; United Nations Conference on Trade and Development, *World Investment Report*, 2012; Economic Research Institute for Northeast Asia (ERINA), *Northeast Asia Economy Databook*, 2012.

The degree of human development is a good proxy for a country’s stage of economic development. It is captured by the Human Development Index (HDI) constructed by the United Nations Development Programme (UNDP), which is a composite indicator measuring the average achievements in three basic dimensions of human development: a long and healthy life, knowledge, and a decent standard of living. The HDI indicators summarized in Table 2 show that Japan and the Republic of Korea performed much better than the European Union average of 0.87 in 2010–2011, whereas Mongolia, the PRC, and the Russian Federation lagged behind.

Table 2: Human Development Index in Northeast Asia

Country or Region	1980	1990	2000	2010	2011
PRC	0.404	0.490	0.588	0.682	0.687
Japan	0.778	0.827	0.868	0.899	0.901
DPRK	--	--	--	--	--
Republic of Korea	0.634	0.742	0.830	0.894	0.897
Mongolia	--	0.504	0.555	0.647	0.653
Russian Federation	--	--	0.691	0.751	0.755
EU27	0.731	0.771	0.830	0.869	0.871
US	0.837	0.870	0.897	0.908	0.910

DPRK = Democratic People’s Republic of Korea, EU = European Union, PRC = People’s Republic of China, US = United States.

Note: Data for EU27 are averages for the 27 countries for which data are available.

Source: United Nations Development Programme, *Human Development Report*, 2011.

Trade Integration

Trade integration in Northeast Asia has increased during the last two decades. The share of intra-Northeast Asian trade in the subregion's total trade with the world has risen from 15.2% in 1992 to 22.8% in 2011. Most of this intra-Northeast Asian trade is due to trade among the PRC, Japan, and the Republic of Korea, accounting for 91.7% of total intra-Northeast Asian trade in 2011. Over the last 20 years, Japan, the DPRK, and the Republic of Korea became increasingly dependent on trade with the PRC (Table 3), while the PRC reduced its dependence on Northeast Asia as a result of its rising dependence on the rest of the world, particularly the US and Europe.

Table 3: Trade Dependence of Individual Countries on Northeast Asia (%)

Country	1992	2000	2010	2011
PRC	22.2	26.7	19.0	18.6
Japan	10.9	16.6	28.5	28.7
DPRK	54.1	34.0	57.4	75.4
Republic of Korea	23.5	26.0	33.3	32.2
Mongolia	78.2	67.6	82.0	81.7
Russian Federation	12.5	8.1	17.0	15.4
Russian far East	--	53.8	65.0	75.0

DPRK = Democratic People's Republic of Korea, PRC = People's Republic of China.

Source: IMF, *Direction of Trade*, Online.

Although data for the Russian Federation show that its trade dependence on Northeast Asia has been low, at less than 17% over the last 20 years, the Russian Far East's trade dependence on Northeast Asia has been high and risen to very high levels such as 75% in 2011. This rise of the Russian Far East's trade dependence on Northeast Asia is mainly due to its surging trade dependence on the PRC; for example, its import dependence on the PRC surged to 50% in 2011. The trade dependence of Mongolia and the DPRK on Northeast Asia has also risen to a high level; it rose in Mongolia from 78% to 82% and in the DPRK from 54% to 75%, between 1992 and 2011. Thus, the DPRK, Mongolia, and the Russian Far East have strong trade links with Northeast Asia, particularly the PRC, Japan, and the Republic of Korea.

Developing a positive environment conducive to business is crucial for attracting the required investment for sustainable growth of the subregion. The current performance of Northeast Asia's business environments, as measured by the World Bank's Doing Business Index, is mixed (Table 4). Surprisingly, Mongolia's Doing Business Index is better than those of the PRC and the Russian Federation. The PRC's business environment is not so good, despite the large size of inward FDI. The Russian Federation faces a formidable challenge in improving the quality of its business environment, while the DPRK is not in the position to attract investment though no data are available. The Republic of Korea has made substantial progress in improving the business environment and now ranks number 8 globally.

Table 4: Business Environment Rankings of Countries in Northeast Asia, 2012

Index Factor	Country	PRC	Japan	Republic of Korea	Mongolia	Russian Federation
Ease of Doing Business Overall Rank		91	24	8	76	112
Starting a Business		151	114	24	39	101
Dealing with Construction Permits		181	72	26	121	178
Getting Electricity		114	27	3	169	184
Registering Property		44	64	75	22	46
Getting Credit		70	23	12	53	104
Protecting Investors		100	19	49	25	117
Paying Taxes		122	127	30	70	64
Trading Across Borders		68	19	3	175	162
Enforcing Contracts		19	35	2	29	11
Resolving Insolvency		82	1	14	127	53

PRC = People's Republic of China.

Source: World Bank, *Doing Business Index*, 2012.

Problem areas in Northeast Asia include “starting a business” (the PRC, Japan, and the Russian Federation); “dealing with construction permits” (the PRC, the Russian Federation, and Mongolia); “getting electricity” (the Russian Federation, Mongolia, and the PRC); “protecting investors” (the Russian Federation and the PRC); “paying taxes” (Japan and the PRC); “trading across borders” (Mongolia and the Russian Federation); and “resolving insolvency” (Mongolia). The lagging Northeast Asian economies, including the Russian Federation and the PRC, are encouraged to work on these areas for improvement.

2.2 Quality of Infrastructure in Northeast Asia

Northeast Asia's diversity is its strength, providing opportunities for trade, investment, and economic development through enhancing its physical connectivity. An important area for the subregion's cooperation is in binding the economies more closely through efficient infrastructure linkages in transport, telecommunications, and energy. Economies can flourish when they exploit complementarities. In Northeast Asia, the Russian Far East and Mongolia are resource rich economies, while Japan and the Republic of Korea are strong in high-tech manufacturing industries. The PRC has abundant labor and provides a large, expanding market. Given that the PRC, Japan, and the Republic of Korea need raw materials, minerals, and energy, particularly gas and oil, for economic growth and that the Russian Federation—and to some extent Mongolia—can supply these resources, the Northeast Asian economies can exploit each other's complementarity. However, these cannot be developed without the support of cross-border infrastructure connectivity. To maximize the benefit from complementarities across economies in Northeast Asia, significant subregional cooperation is needed.

Competitiveness and Quality of Infrastructure

The global competitiveness of Northeast Asian economies depends heavily on the quantity and quality of their infrastructure. Given the importance of infrastructure for subregional economic integration and connectivity, this subsection looks at the quantity and quality of infrastructural facilities in the subregion and assesses the need for investment in such crucial components as transport, energy, information and communications technology (ICT), and logistics.

Table 5 shows that, among the Northeast Asian countries for which data are available, Mongolia is weak in infrastructure and there is also room for improvement in the PRC and the Russian

Federation. It is essential to strengthen the quality of infrastructure within and between countries to improve the competitiveness of the entire subregion.

Table 5: Global Competitiveness Index and Infrastructure Quality in Northeast Asia

Country	2001–2002			2012–2013		
	GCI Rank	Infrastructure Rank	Score	GCI Rank	Infrastructure Rank	Score
PRC	47	61	2.9	29	48	4.46
Japan	15	15	6.0	20	11	5.92
Republic of Korea	28	27	4.8	19	9	5.92
Mongolia	--	--	--	93	112	2.83
Russian Federation	63	--	--	67	47	4.52

GCI = Global Competitiveness Index, PRC = People's Republic of China.

Note: GCI score for infrastructure: 1 = poorly developed and inefficient; 7 = among the best in the world.

Source: World Economic Forum, *Global Competitiveness Report*, 2001 and 2012–2013.

Table 6 provides information on logistical performance in Northeast Asian economies, in comparison to Singapore and Hong Kong, which provide one of the best logistics services globally, as well as the US. It is clear that Mongolia and the Russian Federation are weak in logistics, particularly in the areas of customs, logistics competence, infrastructure, and international shipment.

Table 6: Logistics Quality in Northeast Asian Countries, 2012

Country	LPI Rank	LPI Score	Customs	Infra-structure	Internat'l shipments	Logistics competence	Tracking and racing	Timeli-ness
PRC	26	3.52	3.25	3.61	3.46	3.47	3.52	3.80
Japan	8	3.93	3.72	4.11	3.61	3.97	4.03	4.21
Republic of Korea	21	3.70	3.42	3.74	3.67	3.65	3.68	4.02
Mongolia	140	2.25	1.98	2.22	2.13	1.88	2.29	2.99
Russian Federation	95	2.58	2.04	2.45	2.59	2.65	2.76	3.02
Singapore	1	4.13	4.10	4.15	3.99	4.07	4.07	4.39
Hong Kong	2	4.12	3.97	4.12	4.18	4.08	4.09	4.28
US	9	3.93	3.67	4.14	3.56	3.96	4.11	4.21

LPI = logistical performance indicator, PRC = People's Republic of China, US = United States.

Source: World Bank Logistical Performance Indicators, 2012.

Table 7 provides information on the quantity and quality of selected types of infrastructure, such as electricity supply, telecommunications, and paved roads, from international comparative perspectives. In the DPRK, the quantity of infrastructure is very low and its quality very poor in comparison with other countries, followed by Mongolia, though the latter generally performs better than South Asia and Sub-Saharan Africa. The PRC does not exhibit strong performance in comparison to the Russian Federation. Ample room exists for the underdeveloped Northeast Asian economies—the DPRK and Mongolia—to invest more in infrastructure.

Table 7: Levels of Selected Infrastructure in Northeast Asia—International Comparison

Country or Region	Electric power consumption per capita (kWh) 2009	Landline and mobile phone subscribers (per 100 people) 2011	Internet users (per 100 people) 2011	Percentage paved roads 2009
PRC	2,631	94.4	38.4	53.5
Japan	7,819	153.7	78.0	80.1
DPRK	733	8.9	--	2.8
Republic of Korea	8,900	169.4	81.5	79.3
Mongolia	1,411	111.8	20.0	3.5
Russian Federation	6,133	210.2	49.3	80.0
East Asia and the Pacific	2,095	97.7	33.6	30.7
South Asia	517	71.5	9.4	53.9
Latin America and the Caribbean	1,892	125.3	39.3	22.5
Middle East and North Africa	1,497	105.1	26.3	75.2
Sub-Saharan Africa	517	54.3	12.3	18.9

DPRK = Democratic People's Republic of Korea, PRC = People's Republic of China.

Notes:

1. Data for percentage paved roads are for 2002 (Mongolia), 2006 (the DPRK), 2007 (Russian Federation), and 2008 (the PRC).

2. Data for various regions of the world are for developing countries only.

Source: World Bank, *World Development Indicators*, 2012.

Transport and Logistics, Information and Communication Technology, and Energy and the Environment

Three aspects of infrastructural development are critical to subregional integration: transport and logistics, ICT, and energy and the environment.

High transportation costs are a major factor hindering intra-subregional trade and integration in Northeast Asia. Inadequacies in both hardware and software components of transport contribute to these costs. Cooperation on transport hardware requires investment in subregional transport corridors to ensure better connectivity for the faster movement of goods and people across borders, whereas cooperation in transport software calls for trade facilitation by overcoming institutional constraints and bottlenecks that raise the cost of trade and thus harm competitiveness.

With the exception of the DPRK, Northeast Asia generally performs better on the quality of ICT than the rest of the world. Nonetheless, internet usage is likely to continue to rise rapidly in the years ahead. The development of telecommunications and internet infrastructure in the subregion can help promote trade in services, which will in turn help improve education, innovation and the flow of ideas, technology, and investments.

A reliable supply of energy and electricity power at reasonable costs is critical not only for improving industrial competitiveness, but also other infrastructural services, such as the internet and telecommunications. Northeast Asia needs to address a lack of cross-border transmission links as well as inadequate national infrastructure even for transmitting power within countries. A new challenge is to meet the increasing demand for energy while lowering the impacts on the environment and climate change in the face of rapid industrialization, urban expansion and development, and increased pollution in countries like the PRC. Critical efforts are needed to

make transport and energy investments more environmentally friendly, improve the energy mix and energy efficiency, and reduce greenhouse gas emissions. It is important that new infrastructure investment, particularly in transport and energy, should target environmentally sustainable projects.

2.3 Infrastructure Investment Needs

According to ADB and ADBI (2009), developing Asia will need a total price tag of \$8.3 trillion, or \$750 billion per year, for the entire region's infrastructure needs in transport, telecommunications, energy, and water and sanitation during 2010–2020. This investment in Asian infrastructure and connectivity would produce large real income gains of about \$13 trillion for developing Asia during the same period and beyond. This study identified the challenges in strengthening regional infrastructure—both hardware and software—through regional cooperation. It evaluated existing cross-border infrastructure programs, policies, and institutions and offered recommendations to address key challenges for Asian infrastructure cooperation. The study proposed the creation of two mechanisms: a Pan-Asian infrastructure forum to help coordinate and integrate existing national, subregional, and regional infrastructure development initiatives toward a seamless Asia; and an Asian infrastructure investment fund to mobilize national and international financial resources (public and private) and help prioritize, prepare, and finance bankable cross-border infrastructure projects.

Unfortunately, the ADB and ADBI study or background papers prepared for the study (compiled in Bhattacharyay, Kawai, and Nag [2012]) did not identify infrastructure investment needs for Northeast Asia, though the study and the associated papers provided useful information on infrastructure investment needs for the PRC and Mongolia and some cross-border infrastructure projects in the subregion. But no estimates were made for investment needs in the Northeastern PRC, the DPRK, or the Russian Far East.

An earlier study by Katz (1998) estimated that the cost of upgrading and expanding infrastructure in Northeast Asia would amount to \$7.5 billion per year up to the mid-2010s. These figures have been updated by several experts, but not always in a systematic way.

For example, Hiraki (2003) estimated that Northeast Asia would need to invest a total sum of \$160 billion in various types of infrastructure during 2011–2020. This amount was considered necessary to make the level of each country's or area's infrastructure comparable to the level of the Republic of Korea's infrastructure in 2000.² Hiraki provided estimates for three key sectors: transport (airports, harbors, railways, and roads); energy (power plants, and oil and gas pipelines); and environmentally sustainable facilities (portable water supply, waste water disposal, waste management, and pollution prevention apparatus). His estimates indicated that the transport sector would require the largest amount (\$117 billion), followed by the energy sector (\$41 billion), and the environmental sector (\$3 billion). Of the total \$160 billion, the Northeastern PRC would need \$61 billion, the DPRK \$53 billion, the Russian Far East \$41 billion, and Mongolia \$5 billion.

According to an estimate made by Choo (2004), the Northeast Asia subregion would require a total of \$1,589 billion during 2003–2014 for all types of infrastructure investment. Assuming that a substantial portion of this total could be financed domestically, he argued that external

² Hiraki also took into account other basic indicators such as the development of road networks, in kilometers per 1,000 square kilometers, in relation to gross domestic product (GDP) per capita, and the number of passengers and the volume of cargos in relation to GDP.

financing needs for infrastructure development would be \$161 billion.³ According to Choo, the \$161 billion would be divided into \$81 billion for the Northeast PRC, \$29 billion for the Russian Far East, \$28 billion for the Republic of Korea, \$15 billion for the DPRK, and \$8 billion for Mongolia and Tumen River-related cross-border projects.

In one of the background papers for the ADB and ADBI study, Bhattacharyay (2012) reported the PRC's estimated infrastructure needs to be \$4,370 billion during 2010–2020 and its sectoral allocation to be \$1,130 billion for transport, \$2,780 for electricity, \$360 billion for ICT, and \$110 billion for water and sanitation. He also reported Mongolia's estimated needs to be \$10.1 billion during the same period and its sectoral allocation to be \$9.0 billion for transport; \$0.9 billion for ICT; and \$0.2 billion for water and sanitation. The figures for the PRC covered all provinces and autonomous regions and no separate estimates for the Northeast PRC were available. Given that the Northeast PRC accounts for 10.0% of total population (in 2011), 12.6% of gross domestic product (GDP) (in 2011), and 14.3% of fixed asset investment (in 2010), the Northeast PRC's investment needs could be estimated to be \$440 billion–\$620 billion, much larger than the estimates provided by earlier authors.⁴

Finally, in October 2009, the Mongolian government announced 26 high-priority large-scale projects to be implemented during the 2010-15 period. According to this announcement, the total investment cost for the projects was \$20 billion.⁵ Of this total, \$10 billion would be needed for infrastructure development, including energy (\$4.6 billion), transport (\$4.1 billion), water and sanitation (\$0.74 billion), and ICT (\$0.7 billion). In November 2012, the Ministry for the Development of the Russian Far East, Government of the Russian Federation, revealed its infrastructure development plans to be implemented by 2025.⁶ It proposed a total of 92 projects with the cost of 5,876 trillion rubles (\$196 billion). Of this total, \$63 billion could be considered as infrastructure development projects in the Russian Far East, including transport (\$52 billion), electric power (\$11 billion), and public utilities (\$0.4 billion).

Putting all the pieces of information together (see Table 8), we may arrive at the tentative conclusion that the total annual infrastructure investment needs for Northeast Asia, excluding Japan and the Republic of Korea, over the next 10 years or so are estimated to be \$61 billion.

³ Choo used different methods to arrive at the estimated figures, but did not provide sectoral allocations except for the Republic of Korea where he showed breakdowns of transport sector investment needs. He assumed that external financing would be necessary to meet part or whole of total investment needs: 6% for the Northeast PRC, 18% for the Republic of Korea, 50% for the Russian Far East, Mongolia and Tumen River-related projects, and 100% for the DPRK.

⁴ The ADB and ADBI (2009) study and Bhattacharyay (2012) also tabulated some information on cross-border infrastructure investment needs involving the PRC, Mongolia, and the Republic of Korea. But information related to the PRC did not cover cross-border projects involving the Northeast PRC. The cross-border investment requirements for Mongolia are \$4.59 billion for transport (\$310 million for airports, \$3,280 million for railways, \$770 million for roads, and \$230 million for trade facilitation and logistics) and \$40 million for energy. These investments are mostly in the context of the CAREC program, the Asian Highway project, and the Trans-Asian Railway project. The cross-border investment requirements for the Republic of Korea, in relation to the Trans-Asian Railway project, are \$60.7 billion (\$10.5 billion for the Honam line, \$7.2 billion for the Kyobu line, and \$43.0 billion for the National Railway Development Plan).

The Asian Highway Network was agreed by 32 governments, including all of the six Northeast Asian governments and was put into force in July 2005. The Trans-Asian Railway Network was agreed by 28 governments, including all the Northeast Asian governments except Japan, and was put into force in June 2009. These projects have been proposed and supported by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP).

⁵ See ERINA Business News, Vol. 80 (July 2010) for details.

⁶ The author is grateful to Dr. Tadashi Sugimoto of ERINA for sharing this information.

This total is divided into: \$49 billion for the Northeast PRC (annualized average of the range \$440–620 billion during 2010–2020); \$5 billion for the DPRK;⁷ \$2 billion for Mongolia; and \$5 billion in the Russian Far East. Assuming that high-priority subregional cross-border investment needs would be \$2 billion per year,⁸ the total annual indicative price tag would be \$63 billion, though there may still be a large margin of error. For example, investment in ICT and the environment in the DPRK and the Russian Far East would be needed. Assuming that the PRC and the Russian Federation finance most—say, 95% and 75% respectively—of their national infrastructure projects out of their own domestic resources (both public and private), governments in Northeast Asia would have to mobilize external financial resources of roughly \$13 billion per year (\$2.9 billion for the Northeast PRC, \$5.3 billion for the DPRK, \$1.7 billion for Mongolia, \$1.2 billion for the Russian Far East, and \$2. billion for subregional cross-border projects).

Table 8: Annual Indicative Infrastructure Investment Needs in Northeast Asia

		(\$ billion)					
	Country/Area	Northeast PRC	DPRK	Mongolia	Russian Far East	Cross-border	Total
Sector	Period covered	2010–20	2011–20	2010–15	2013–25		
Transport		12.6	4.3	0.7	4.0	0.8	22.4
Energy		31.0	1.0	0.8	0.9	1.2	34.9
ICT		4.0	0.0	0.1	0.0	0.1	4.2
Environment		1.2	0.0	0.1	0.0	0.1	1.4
Total		48.8	5.3	1.7	4.9	2.2	62.9

DPRK = Democratic People's Republic of Korea, PRC = People's Republic of China.

Notes:

1. The annual investment needs are obtained for each country or area by dividing the original data by the number of years of the period covered in the estimates.

2. The environment refers to water and sanitation.

Sources: Bhattacharyay (2012) for the Northeast PRC; Hiraki (2003) for the DPRK; Mongolian government (2009) for Mongolia; and Russian Federation Government (2012) for the Russian Far East.

To summarize, several authors have made various estimates on the infrastructure investment needs in Northeast Asia, but information is fragmented and sketchy and a more comprehensive, up-to-date assessment is necessary. Such a needs assessment should include both national and cross-border infrastructure investment projects—for transport, energy, ICT, and the environment (including water and sanitation)—with the latter focusing on strengthening subregional connectivity. Nonetheless the indicative investment needs obtained above would give us a tentative idea about the scale of financing needs for the subregion's infrastructure development and connectivity.

⁷ One needs to be aware that it is extremely difficult to obtain any reliable estimates on the DPRK's infrastructure investment needs due to lack of data.

⁸ The total amount of annual indicative investment needs for Northeast Asia at the national level, \$61 billion, is 8.4% of total annual investment needs for Asia's national infrastructure projects identified by the ADB and ADBI study (\$726 billion per year during 2010–2020). Applying the same percentage share of 8.4% to total annual investment needs for Asia's cross-border infrastructure projects identified by the same study (\$26 billion), one obtains an estimate, \$2.2 billion, for annual cross-border investment needs in Northeast Asia. In Table 8, this amount of \$2.2 billion is allocated to sectors in the same proportions as national infrastructure investment needs.

3. LESSONS FROM SUBREGIONAL COOPERATION IN OTHER PARTS OF ASIA

3.1 Association of Southeast Asian Nations

Asian economies have developed various types of subregional cooperation initiatives to promote trade and investment, infrastructure development, energy security, environmental protection, and finance. The most successful example of subregional cooperation is that of ASEAN, established in 1967, which now comprises Brunei Darussalam, Cambodia, Indonesia, the Lao People's Democratic Republic (Lao PDR), Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Viet Nam. Its objectives include promoting economic growth, social progress, and economic integration among its members; narrowing development gaps within the group; and protection of regional peace and stability. The organization is supported by the ASEAN Secretariat. It holds the ASEAN Summit, where heads of member states meet to discuss common issues and make key decisions, and conducts other meetings with heads of state of its dialogue partners outside of the bloc with the intention of strengthening external relations.

Evolution of the Association of Southeast Asian Nations

The ASEAN member states have adopted the following fundamental principles, as contained in the Treaty of Amity and Cooperation in Southeast Asia (TAC) of 1976:

- (i) Mutual respect for the independence, sovereignty, equality, territorial integrity, and national identity of all nations;
- (ii) The right of every state to lead its national existence free from external interference, subversion, or coercion;
- (iii) Non-interference in the internal affairs of one another;
- (iv) Settlement of differences or disputes by a peaceful manner;
- (v) Renunciation of the threat or use of force; and
- (vi) Effective cooperation among themselves.

ASEAN also began to conclude the TAC with its dialogue partners, including Australia, the PRC, India, Japan, the Republic of Korea, the Russian Federation, and the US.

To celebrate its 30th Anniversary in 1997, the ASEAN Leaders adopted the ASEAN Vision 2020, which clarified a shared vision of ASEAN as a concert of Southeast Asian nations; outward looking; living in peace, stability, and prosperity; and bonded together in partnership in dynamic development and in a community of caring societies. In 2003, ASEAN subscribed to the notion of democratic peace, which meant all member countries believed democratic processes would promote regional peace and stability. The non-democratic members all agreed that it was something all member states should aspire to.

On its 40th Anniversary in 2007, the ASEAN Leaders made a strong commitment to establish an ASEAN Community by 2015, composed of three pillars—the ASEAN Economic Community, ASEAN Political-Security Community, and ASEAN Socio-Cultural Community. The ASEAN Charter was adopted in 2008. The Charter—a constitution governing relations among the ASEAN members and establishing ASEAN as an international legal entity—serves as a firm foundation in achieving the ASEAN Community by providing a legal status and institutional framework for ASEAN. It codifies ASEAN norms, rules, and values; sets clear targets for ASEAN; and presents accountability and compliance. With the implementation of the ASEAN

Charter, ASEAN began to operate under a new legal framework and established a number of new organs to boost its community-building process.

Among the three communities, the ASEAN Economic Community is making the most significant progress as it builds on the success of the ASEAN Free Trade Area, the ASEAN Framework Agreement on Services, the ASEAN Investment Area, and other economic integration initiatives. As a result of these efforts, ASEAN is now the de facto hub for East Asian economic integration. It has established a series of ASEAN+1 processes, particularly in the form of ASEAN+1 free trade agreements such as those with Australia, the PRC, India, Japan, the Republic of Korea, New Zealand, and others. It is also the core of the ASEAN+3 group (comprising the 10 ASEAN members plus the PRC, Japan, and the Republic of Korea) which has intensified financial cooperation through the Chiang Mai Initiative, regional economic and financial surveillance, and Asian bond market development; the ASEAN+6 group (including ASEAN+3 countries plus Australia, India, and New Zealand) which is working to establish a Regional Comprehensive Economic Partnership; and the East Asia Summit (including also the US and the Russian Federation) which has addressed both economic and non-economic issues.

Master Plan on ASEAN Connectivity

The ASEAN Leaders adopted the Master Plan on ASEAN Connectivity in 2010 to enhance intra-ASEAN connectivity and help establish the ASEAN Community. The Master Plan attempts to accelerate existing ASEAN initiatives and ASEAN Community building; foster a win-win solution for all ASEAN member states; synchronize ongoing sectoral strategies and plans within ASEAN and its subregions; balance ASEAN and national interests; strengthen connectivity between mainland and archipelagic Southeast Asia; preserve ASEAN centrality; and develop clear financial models, including the involvement of private sector funding.

More specifically, the Master Plan promotes three types of connectivity: physical, institutional, and people-to-people. Physical connectivity focuses on transport (ASEAN highway network, railway links, maritime and inland waterways, and multimodal transport systems); ICT infrastructure and services; and energy. Institutional connectivity focuses on the framework agreements on transport facilitation (inter-state passenger land transportation, an ASEAN Single Aviation Market, and an ASEAN Single Shipping Market); liberalization of merchandise trade; development of an efficient and competitive logistics sector (transport, telecommunications, and other connectivity supporting services); trade facilitation (border management capabilities); investment liberalization and facilitation; and institutional capacity strengthening in ASEAN's lagging areas and for improvement of ASEAN-subregional coordination of policies, programs, and projects. Finally, people-to-people connectivity attempts to promote deeper intra-ASEAN social and cultural understanding and encourage greater intra-ASEAN people mobility. Mutual recognitions among member countries on tourism and education services are identified as important for strengthening people-to-people connectivity.

To help support ASEAN infrastructure development and connectivity generally and the Master Plan more specifically, the AIF has been established as an innovative financial mechanism. The AIF has three main development objectives: (i) helping to implement the Master Plan on ASEAN Connectivity, (ii) providing additional financial resources for enhanced infrastructure, and (iii) promoting private sector participation in infrastructure development through public-private partnership (PPP).⁹

⁹ PPP is a partnership of government and the private sector to fund and/or operate government services or private business ventures. In large-scale infrastructure projects, the role of government remains vital as a large proportion of projects—with the exception of telecommunications projects—still requires some form of government guarantee.

3.2 Other Subregional Programs

Over the years, various cross-border infrastructure and connectivity initiatives have been implemented in several subregions in Asia. They include the GMS Economic Cooperation Program, the CAREC Program, the SASEC Program, and BIMSTEC. Broadly, these initiatives aim to develop and improve transport connectivity, through both hardware and software cooperation; to improve linkages between countries in the respective subregions; and to ease the flow of goods, services, information, and people in each subregion.

ADB has been a key supporter of these subregional programs. Over the last 2 decades, ADB in partnership with its member countries and other multilateral development partners, has mobilized more than \$35 billion to promote connectivity and integration in these subregions. Table 9 summarizes information on subregional infrastructure and connectivity initiatives in Asia.

Table 9: Subregional Cooperation Programs in Asia

Item	Vision/Mission	Priority activity	Amount invested
GMS (1992)	A Mekong subregion that is more integrated, prosperous, and equitable	Transport, energy, telecommunications, environment, human resource development	\$15.0 billion
CAREC (1997)	Good neighbors, good partners, and good prospects	Transport, trade facilitation, energy, and trade policy	\$17.7 billion
BIMSTEC (1997)	--	Trade and investment, transport and communications, tourism, energy, human resource development, etc.	--
SASEC (2001)	From poverty to growth: transforming challenges into opportunities	Transport, trade facilitation, energy, and information and communication technology	\$3.4 billion

BIMSTEC = Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation, CAREC = Central Asia Regional Economic Cooperation, GMS = Greater Mekong Subregion, SASEC = South Asia Subregional Economic Cooperation.

Source: Author from various sources of ADB.

Greater Mekong Subregion Economic Cooperation Program

Initiated in 1992, the GMS program covers Cambodia, the southern part of the PRC (Yunnan Province and Guangxi Zhuang Autonomous Region), the Lao PDR, Myanmar, Thailand, and Viet Nam. Its main focus is to enhance the so-called “3Cs”: connectivity, competitiveness, and community. Key activities include the development of economic corridors (north-south, east-west, and southern), with cross-border roads as the backbone to improve access; institutional and policy support to facilitate trade; and transit policy harmonization to reduce logistics costs within the subregion.

The major challenges that private sector infrastructure providers face in developing new, and maintaining existing, infrastructure include the ability of government to deliver required infrastructure; economic conditions and availability of financing; skills shortages in the public and the private sector; limited availability of long-term finance in domestic markets; currency mismatches caused by borrowings in foreign currencies with revenues in local currency; and the impact of foreign exchange rate fluctuations on debt repayments (KPMG 2009).

The first GMS Summit was convened in 2002 and it has been held once every 3 years. The GMS also has ministerial conference processes. ADB plays the secretariat role for this grouping.

As of the end of December 2011, 56 priority projects worth about \$15 billion either have been completed or are being implemented. Progress is also being made in power interconnections and hydropower projects, the information superhighway network, and the implementation of the Cross-Border Transport Agreement. The GMS program is now focusing on multisector investments to widen and deepen economic corridors, including urban development, connections to maritime gateways, improved transport, energy, telecommunications, agriculture, environment, human resource development, tourism, transport and trade facilitation, and investment.¹⁰

Central Asia Regional Economic Cooperation Program

The CAREC Program is an ADB-supported initiative, established in 1997 to encourage economic cooperation among countries in Central Asia, covering 10 ADB member countries: Afghanistan, Azerbaijan, the PRC, Kazakhstan, Kyrgyz Republic, Mongolia, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan. Under its new 10-year strategic framework, 2011–2020, CAREC's strategic objectives are to expand trade in the subregion and improve competitiveness by implementing focused, action-oriented, and results-driven subregional programs and projects in transport (roads in particular), energy (hydro), trade policy, trade facilitation, and economic corridor development.

CAREC is also an alliance of multilateral institutions active in promoting economic cooperation in Central Asia, comprising ADB, the European Bank for Reconstruction and Development (EBRD), IMF, Islamic Development Bank, UNDP, and the World Bank. ADB has served as the program secretariat since 2000. Since 2001, ministerial conferences have been organized annually.

During 2001–2011, the CAREC Program has implemented 121 priority projects worth \$17.7 billion. Some key achievements of the program include the improvement of 4,000 kilometers (km) of roads and 2,240 km of railways along six priority transport corridors traversing the subregion (east-west and north-south); the pilot-testing of the Kazakhstan-PRC and Mongolia-PRC joint customs control; the adoption of Customs Codes based on the Revised Kyoto Convention, which would simplify and harmonize customs procedures in all CAREC countries; the expansion of power generation capacity and interconnection; and the formulation of a subregional power master plan. The strategic framework has been accompanied by rolling medium-term priority projects in energy, trade facilitation, and transport. The initial projects contain 68 transport projects worth over \$24 billion, 41 energy projects worth almost \$33 billion, and five trade facilitation projects worth \$0.6 billion.

South Asia Subregional Economic Cooperation Program

The SASEC program is a project-based initiative that promotes economic development and cooperation through the enhancement of cross-border connectivity and facilitation of trade among four of the seven member countries of the South Asian Association for Regional

¹⁰ The new GMS Strategic Framework, 2012–2022, uses economic corridor development as a key platform for delivering multisector second-generation investment projects (driven by emerging trends such as urban development), along with greater emphasis on infrastructure “software,” including the promotion of trade and transport facilitation, and other policy and institutional reforms to further promote the competitiveness and sustainability of GMS corridors.

Cooperation (SAARC): Bangladesh, Bhutan, India, and Nepal.¹¹ The priority areas for cooperation include transport, trade facilitation, energy and power, and ICT. Other areas of work include investment, private sector development, tourism, and the environment.

Since the inception of SASEC in 2001, ADB has informally functioned as its secretariat, facilitating economic cooperation initiatives. ADB's support for SASEC has been undertaken mainly through capacity and institutional building for the program and implementing subregional projects and technical assistance.

Progress has been made on a number of fronts, including assessing the need for priority road corridors, upgrading some of these corridors, installing border checkpoints, improving ICT and automation, and addressing border and behind-the-border issues through trade facilitation. Financial support has also been provided to promote rural electrification, cross-border electricity trading and interconnection, and the adoption of clean energy technology. In addition, technical studies were conducted to promote the Bangladesh-India Interconnection Grid project. In November 2011, SASEC officials endorsed investment projects worth \$2 billion to strengthen transport connectivity, trade facilitation, and energy cooperation.

Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation

BIMSTEC is an international organization involving seven countries in South Asia and Southeast Asia: Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, and Thailand. Its aims and purposes are to create an enabling environment for rapid economic development; accelerate social progress in the subregion; promote active collaboration and mutual assistance on matters of common interest; provide assistance to each other in the form of training and research facilities; cooperate in joint efforts that are supportive of, and complementary to, national development plans of member countries; maintain close and beneficial cooperation with existing international and regional organizations; and cooperate in projects that can be dealt with most productively on a subregional basis and which make best use of available synergies. BIMSTEC was initiated with the goal to combine the "Look West" policy of Thailand and ASEAN with the "Look East" policy of India and South Asia. So BIMSTEC is intended to be a link between ASEAN and South Asia.

The first BIMSTEC Summit held in 2004 had agreed to promote sustainable and optimal energy utilization through the development of new hydro-carbon and hydro-gas interconnection of electricity and natural gas grids, and renewable energy technologies. BIMSTEC covers 13 priority sectors led by member countries in a voluntary manner: trade and investment; transport and communications; energy; tourism; technology; fisheries; agriculture; public health; poverty alleviation; counter-terrorism and transnational crimes; environment and natural disaster management; cultural cooperation; and people-to-people contact. The BIMSTEC countries have agreed to establish a free trade area (FTA), encompassing not only trade in goods, but also trade in services, investment, and related economic cooperation (customs, standards, trade finance, e-commerce, and business visas).

ADB has been BIMSTEC's development partner since 2005, and has undertaken a study designed to help promote and improve transport infrastructure and logistics among the BIMSTEC member countries.

¹¹ Other members of SAARC include the Maldives, Pakistan, and Sri Lanka.

3.3 Greater Tumen Initiative

Northeast Asia can learn lessons from the experience of these subregional programs in other parts of Asia to enhance its own subregional integration and cooperation in areas such as trade and investment, transport connectivity, ICT, energy and power, environmental protection, and finance.

Northeast Asian economies have undertaken an infrastructure cooperation initiative, called the Greater Tumen Initiative (GTI). Established in 1995 under an earlier name, the GTI is an intergovernmental cooperation mechanism in Northeast Asia, supported by UNDP, with the current membership of four countries: the PRC, the Republic of Korea, Mongolia, and the Russian Federation.¹² The GTI has an institutional framework consisting of two intergovernmental bodies (the Consultative Commission and the Coordination Committee), the Tumen Secretariat, and the Council of Eminent Persons for the Tumen Programme.

The origin of the GTI is in the Tumen River Area Development Programme (TRADP), a subregional program by UNDP commenced in 1991. Its member countries included the PRC, the DPRK, the Republic of Korea, Mongolia, and the Russian Federation, with Japan, Finland, Canada, the World Bank, and ADB holding observer status. It started as a planned 20-year-long program, which envisioned a grand design to transform about 3,000 square kilometers (km²) of the Tumen River Economic Zone into an economic center in Northeast Asia, like Hong Kong and Singapore. The financial needs for the project were estimated at about \$30 billion. However, due to financing difficulties, the project was adjusted to focus on five sectors: trade and investment, transport and communications, environment, tourism, and energy.

Since its commencement, the TRADP had experienced three phases. Phase I (1991–1996) attempted to create a joint special economic zone to be built on land leased from the PRC, the DPRK, and the Russian Federation. It was envisaged that significant infrastructure investment would be required for this internationally managed cross-border zone. Phase II (1997–2000) aimed to operationalize the agreements signed in Phase I and advance development within the subregion with a focus on trade, investment, and environmental management. Phase III (2001–2005) had a dual objective of strengthening the institutional framework of the initiative and continuing to contribute to the economic development of the subregion through concrete actions in the five sectors mentioned above (trade and investment, transport and communications, environment, tourism, and energy).

In 2005, the TRADP's geographic coverage was expanded to include more provinces in the region and the GTI was newly launched as an intergovernmental framework, with member countries making a commitment to take full ownership of the GTI—including the adoption of a strategic action plan by member countries and greater financial contributions to a common fund—and the establishment of legal institutional frameworks to transfer management of the initiative to member countries. UNDP remained committed to supporting the GTI but would shift the focus to concrete projects.

The GTI is now an important platform for supporting subregional economic cooperation, strengthening policy dialogue, improving business environments, and contributing to peace and stability in Northeast Asia. The core decision-making institution of the GTI is the Consultative Commission, which is composed of vice-ministers from the GTI member governments. The

¹² The GTI covers part of Northeast Asia, i.e., the Northeast PRC, the eastern port cities of the Republic of Korea, the eastern provinces of Mongolia, and Primorsky Krai of the Russian Federation. The DPRK was a founding member, but later withdrew membership in 2009. Japan is not a member country but provides an eminent person to the Council of Eminent Persons for the Tumen Programme.

commission's role is to foster support for regional cooperation and development and promote mutual understanding and benefit. It convenes annually to discuss key policy issues and cooperation projects (Table 10) among the GTI members, and hosts joint sessions with strategic partners as well as local governments. The Tumen Secretariat promotes subregional infrastructure projects and identifies potential investors and donors for funding.

Table 10: Approved Greater Tumen Initiative Projects

Projects	No.	Name of the Project
Transport	1	Northeast Asia Ferry Route Border Infrastructure Framework
	2	Modernization of Zarubino Port
	3	Mongolia-PRC Railway Construction
	4	Resuming Hunchun-Makhalino Railway
	5	PRC Road, Harbor Project in the Border between PRC and the DPRK
Energy	6	Capacity Building on GTI Energy
Tourism	7	Capacity Building on GTI Tourism
Investment	8	Training Program for Officials from GTI Member Countries
Environment	9	GTI Environmental Cooperation: Trans-boundary Environmental Impact Assessment and Environmental Standardization in Northeast Asia
	10	Feasibility Study on Tumen River Water Protection

DPRK = Democratic People's Republic of Korea, GTI = Greater Tumen Initiative, PRC = People's Republic of China.

Source: Greater Tumen Initiative.

The GTI has strengthened its supporting institutional structure, by establishing the Energy Board, Tourism Board, Environmental Board, Transport Board and the Trade Facilitation Committee to enhance subregional cooperation in these priority sectors. To encourage private sector participation and PPP in subregional cooperation projects, the GTI has held Investment Forums and created the Business Advisory Council. To enhance local government participation and capacity, the GTI Local Development Forum was launched and the GTI Northeast Asia Local Cooperation Committee was established. In an effort to build a subregional development financing mechanism, the Northeast Asia EXIM Banks Association was created, along with the signing of a memorandum of understanding by three initial member banks (Export-Import Bank of China [Eximbank of China], Export-Import Bank of Korea [Korea Eximbank], and Development Bank of Mongolia).

Despite its large potential, however, the GTI has not been able to make substantial progress in terms of subregional economic and infrastructure development as well as cooperation. The main obstacle has been political. First, political commitment to subregional development cooperation has not been as strong as in Asia's other subregional groups, as evidenced by a lack of leaders' or even ministers' processes. Sufficient financial resources have not been put by member countries. Second, Japan has never been a member of the TRADP or GTI, and the DPRK withdrew its membership. Japan has not joined the program and/or initiative because of the unfavorable political relationship with the DPRK. Third, without tangible economic reforms and opening on the part of the DPRK—not to mention its GTI membership withdrawal—support for infrastructure development may not bear sufficient fruit. A significant improvement of political stance, external relations, and economic regime in the DPRK would be needed for the GTI to become truly effective.

4. OPTIONS FOR A COOPERATIVE FINANCING MECHANISM IN NORTHEAST ASIA

External financing needs for Northeast Asia's infrastructure investment are not small, amounting to \$13 billion per year over the next 10 years or so, given the low levels of economic development in the DPRK and Mongolia and inadequate cross-border connectivity through transport, ICT, and energy.

There are challenges in meeting these investment needs. First, there is a coordination failure problem. Even though subregional cross-border infrastructure investment can benefit all countries involved, there may be little incentive for each government to undertake such investment projects. The incentive to free ride on other countries' cross-border infrastructure projects prevents any one single country's unilateral attempt to invest to strengthen subregional connectivity. In addition, one country's under-investment in such projects—perhaps due to the lack of financing capabilities—can create a weak link in the whole network system, rendering the benefit of connectivity smaller for all countries. This suggests the importance of intergovernmental coordination and cooperation to jointly design and implement a financing scheme for subregional cross-border infrastructure development, and to support financially constrained, underdeveloped countries. But, unfavorable political conditions and lack of mutual trust among some Northeast Asian countries can make intergovernmental cooperation difficult.

Second, financial and sovereign risks can prevent adequate financing. While required investments are long-term in nature, financial returns to investment entail an even longer period and they involve sovereign risk that creates uncertainties about future cost and revenue streams. Most bankable investment projects to be developed therefore need to be at least partly financed by governments and bilateral and multilateral organizations, while engaging private investors in infrastructure development through effective PPP.

This section considers three options as a way of creating a cooperative financing mechanism to meet such investment needs in Northeast Asia, starting with a simpler and moving to a more involved mechanism.

4.1 Special and Trust Funds in Multilateral Development Banks

The simplest approach to fill this financial gap is to set up special and/or trust funds in the existing MDBs (such as the World Bank, ADB, and EBRD), designated for infrastructure investment and connectivity in Northeast Asia. These funds are vehicles for pooling and channeling resources from donor governments to developing country recipients on concessional terms. Special funds are part of MDB resources and accounted for as such, while trust funds are off the MDBs' balance sheets, owned by the contributing donors and administered by a trustee organization such as the MDB(s). Thus, the use of special funds would be appropriate when MDBs participate in a funding effort by allocating resources from their net income to the funds or when donors wish to contribute to the MDBs' core funding windows, and trust funds would be appropriate when MDBs do not provide their own resources in supporting specific activities or countries. In either case the hosting MDBs administer the funds with appropriate governance structures.¹³ As such, special and trust funds may help to address some of the

¹³ These funds are not programs; rather, they are dedicated sources of funding for programs and activities agreed by the donors and the hosting organization. The activities they finance are diverse, ranging from large global programs with their own governance structures to conventional development projects and support for technical assistance. See Chapter 2 and Chapter 3 in Dreesse (2011) for issues on special and trust funds.

technical assistance and investment financing needs for specific purposes. However, the MDBs typically cannot leverage these fund resources directly, in the way they could other shareholder resources.

Benefits and Costs of Special and Trust Funds

There are several benefits for donor governments to utilize special and/or trust funds. First, when bilateral assistance is difficult, but there is a need to fill gaps in the multilateral aid system, these funds can be mobilized. Second, when the existing allocation system of the MDBs—which is often a country-performance-based system—prevents the effective use of MDB resources, special and/or trust funds can be set up as a way of directing aid resources to target countries and subregions of national interest. Third, when donor governments lack the financial resources or expertise to scale up their bilateral programs to deliver desired aid, special and/or trust funds allow these donors to combine their resources with the technical expertise and management capacity of the hosting MDBs. MDBs have the capacity to manage financial and operational risks and deploy financial resources, and generally strong working relations with recipient governments. Fourth, donor governments can provide technical and financial assistance for non-member countries of an MDB, through trust and/or special funds, when it takes time to approve new membership for these countries (see Box 1). Fifth, donor governments can provide earmarked special and/or trust fund resources to encourage the MDBs and the broader international community to focus on specific, new development needs. Donors can use these funds as a mechanism for attracting aid in priority areas.

Box 1: EBRD's Support for "Arab Spring" Countries through Trust and Special Funds

In response to the Group of Eight Summit's call for support for "Arab Spring" countries that embrace democracy, pluralism, and market economies, made in Deauville in May 2011, EBRD began to extend its mandate to the Southern and Eastern Mediterranean (SEMED) region. As SEMED countries were not members, EBRD decided to support these countries in three steps:

- Technical assistance through trust funds set up in EBRD;
- Investment and lending support through special funds created in EBRD; and
- Investment and lending support through EBRD itself.

The third step was considered to take a long time as it required the countries to become recipient members of EBRD by modifying Article 1 of the Charter, which would require agreement by all shareholders. As a result, EBRD took the first two steps. The first step was relatively easy as EBRD was able to mobilize trust funds for technical assistance for non-members under the existing Charter. The second step was more demanding as it required the amendment of one of the articles of the Charter with 80% consent. EBRD shareholders agreed to this and in May 2012 to the creation of a 1 billion euros special fund to start investment in Egypt, Jordan, Morocco, and Tunisia. EBRD expects to eventually invest up to 2.5 billion euros a year in the new region. As of the end of 2012, EBRD shareholders have yet to achieve membership expansion (the third step).

Source: European Bank for Reconstruction and Development, website.

In recent years, trust funds have emerged as an important pillar of the aid architecture along with bilateral and multilateral assistance. These include the Global Environment Facility (GEF); Global Fund to Fight AIDS, Tuberculosis and Malaria; and Climate Investment Funds (CIF)—comprising two separate windows, i.e., the Clean Technology Fund and Strategic Climate Fund.

There are also benefits to recipient governments in using special and/or trust funds. First, these funds provide additional financing on concessional terms. For low-income countries, which regularly receive assistance on concessional terms from bilateral and multilateral donors, special and trust funds can bring additional aid resources into the country. In middle-income countries, which are reluctant to borrow for technical assistance, these funds can finance such assistance on concessional terms. In addition, these funds provide grants for any recipient country's participation in subregional programs. Second, even if a country is not a member of an MDB, it can receive concessional resources through special and/or trust funds with shareholder consent.¹⁴ Or when a country joins an MDB, it can start receiving technical and financial assistance through these funds before normal country operations begin, which may take time due to the required procedures such as needs assessments and country program agreements. Third, countries with a plethora of donors may view special and trust funds as a mechanism to replace piecemeal support of bilateral projects and to strengthen donor coordination and harmonization. Fourth, special and trust funds can be designed to provide resources reasonably quickly in response to a request for project preparation, specific technical assistance, or additional components to an existing program or project. This flexibility and responsiveness is valued by recipient countries.

While useful and less costly than other mechanisms, there are several issues for special and trust funds. First, to enable these funds—which are used essentially as grants—to continue financing infrastructure projects, the contributed funds need to be replenished once every few years, which often faces difficulties because of budgetary constraints in donor countries. Second, special and trust funds typically would not be able to create the multiplier effect of credit that an MDB does, i.e., mobilizing large amounts of funds from international capital markets through bond issuance. The reason is that, typically, special and trust funds are not backed by capital—whether paid-in or callable—or other assets to serve as collateral against their borrowings in the international capital markets.¹⁵ As a result, the total volume of financing to be mobilized through these funds tends to be limited, even though the hosting MDBs can cofinance to supplement fund-supported projects. Third, because of the pooling of donor resources, donor governments typically get less visibility and “credit” from these funds, a factor that has been a source of concern.

¹⁴ As in the case of the EBRD, ADB can also provide technical assistance (TA) and financial support to non-members through trust and/or special funds. An important qualification is that the territory of any non-member would have to be found in the region of Asia and the Pacific. In addition, the ADB Board of Directors would have to be satisfied that the terms setting up the trust and/or special fund, and conditions of its use proposed by the donors, would be fully consistent with the purposes and functions of ADB. An example of such TA and financial support for non-members includes the case of the multi-donor Trust Fund for East Timor (administered by the International Development Association of the World Bank and implemented jointly with ADB) when East Timor was under a United Nations transitional administration before becoming politically independent. East Timor received the benefit of TA and financial support from the World Bank and ADB for its reconstruction and development through this trust fund starting in early 2000 even though the territory did not join the World Bank and ADB as a formal member until 2002. ADB assumed the lead role for preparing and managing activities in transport infrastructure (roads, ports, and airports), power, telecommunications, and water and sanitation. However, to name East Timor as an additional territory in which trust fund resources could be validly expended, it was necessary for the ADB Board to make some small technical amendments to the relevant regulations for the provision of assistance. Importantly, no amendment to the ADB Charter was required.

¹⁵ There are exceptions to this. Contributors to the CIF can provide funding to the trust funds in the form of grant or capital contributions, and in the case of the Clean Technology Fund, concessional loan contributions. Both funds are able to provide concessional loans, grants, and guarantees, through one of six partner MDBs, to recipient countries.

Special and Trust Funds for Northeast Asian Infrastructure Development and Connectivity

In Northeast Asia, special and/or trust funds targeting subregional infrastructure development and connectivity could be set up in the MDBs. Given the expertise and knowledge on subregional cooperation programs through its secretariat support for GMS and CAREC, ADB is a natural candidate to administer such funds. However, as the Russian Federation is not a member of ADB, there is a limitation for ADB to function as the sole administrator of the funds. The EBRD can play a role as the Russian Federation is its member. The World Bank, which includes all Northeast Asian countries except the DPRK as its members, may also join such funds. Thus, donor governments may establish special and/or trust funds in ADB, EBRD, and possibly the World Bank.

Since multiple MDBs could be involved, it is essential to organize coordination among the special and trust funds set up in these MDBs. Principles need to be developed to identify and prioritize subregional projects. These principles may include:

- (i) Subregional integration: the extent to which fund-supported projects improve subregional connectivity and integration;
- (ii) Political support: the extent to which projects have been officially endorsed by recipient governments;
- (iii) Sustainable development impact: the magnitude of projects' development impact and the extent to which they promote environmentally and socially sustainable development;
- (iv) Institutional capacity: the capacity of the relevant agencies and institutions to implement and manage projects;
- (v) Private sector potential: the potential to attract private sector financing and operations;
- (vi) Stakeholder coordination: liaising with other development stakeholders, including bilateral donors, the private sector, and civil society; and
- (vii) Implementation: monitoring progress in implementing programs, and compliance with approved policies on the use of fund resources.

4.2 Infrastructure Investment Fund

A second approach is to create a well-structured infrastructure investment fund designed for Northeast Asia, which is more independent than special and trust funds at the MDBs. A good example is found in the AIF.

ASEAN Infrastructure Fund

Recognizing that ASEAN countries would have to mobilize about \$60 billion a year until 2020 to address their infrastructure deficits, ASEAN finance ministers decided to create an AIF. In so doing, they took into account the following points as useful properties of the fund: traditional public financing, greater utilization of domestic savings (including foreign exchange reserves), private sector debt financing through capital markets, promotion of PPP, effective project development, and efficient project management. Traditional public financing was considered necessary as even though private sector funding was essential for large-scale infrastructure projects, the high degree of perceived risk on long-tenor infrastructure transactions could inhibit private sector investment. Public sector support—through the AIF—was expected to help mitigate these risks, providing financing for a portion of PPP. The AIF was considered to be able to pool equity capital, raise sufficient funding, and invest in subregional infrastructure projects.

It took 2 years to design the basic structure, governance, and financing capacity of the AIF. The AIF was created as a corporate entity, domiciled in Malaysia. All investors (nine ASEAN member governments, excluding Myanmar, and ADB) were to be represented at the AIF Board for oversight functions. The ADB was requested to play the role of an equity investor, co-financier, and administrator (Box 2).

Box 2: Main Characteristics of the ASEAN Infrastructure Fund

The AIF will be domiciled in Malaysia as a limited liability company, which ADB has been requested to administer.

The AIF will be established with an initial core equity contribution expected to be \$485 million, of which \$335 million is to be provided by nine ASEAN members and the remaining \$150 million by ADB. Hybrid capital of \$162 million will be raised in capital markets.

The AIF will issue debt to be purchased by central banks' foreign exchange reserves, to recycle the subregion's foreign reserves for its growing infrastructure needs.

The AIF's total lending commitment through 2020 is expected to be about \$4 billion.

With projected 70% cofinancing by ADB, the AIF plans to leverage more than \$13 billion in infrastructure financing by 2020.

The AIF is expected to finance about six infrastructure projects each year, with a \$75 million lending cap per project. Projects will be selected based on sound economic and financial rates of return, and the potential impact on poverty reduction and trade and investment.

Source: Asian Development Bank (2011).

Financial Structure of the ASEAN Infrastructure Fund

The basic financing design and structure of the AIF is summarized in Table 11. First, the AIF is created by equity (core equity of \$485 million provided by nine ASEAN countries and ADB plus hybrid capital of \$162 million raised in capital markets) and debt issued to central banks (through foreign exchange reserves) to leverage 1.5 times the equity. Second, this will allow sovereign annual lending of \$300 million by the AIF. With additional cofinancing from ADB, the AIF can have significant financing capacity. Third, the AIF can also provide support for the public portion of PPP projects, and begin non-sovereign lending in around 2015 (limited to 10% of total).

Table 11: Basic Financing Design and Structure of the ASEAN Infrastructure Fund

Equity	Debt	Lending Operations	ADB's Role
\$335 million from nine ASEAN countries	Debt issuance to leverage 1.5 times the equity;	Lending to relevant ASEAN countries;	Generate the project pipeline;
\$150 million from ADB;	High-investment grade credit rating targeted;	Based on ADB's country partnership strategy, and regional pipelines;	Ensure that appropriate safeguards and due diligence are part of the project design and administration and report to ASEAN;
Around \$162 million in hybrid capital (perpetual bonds);	Central banks and other institutions, including private sector, to purchase the debt after a clear track record and sufficient lending volume	Initially only on sovereign and sovereign-guaranteed projects and the public portion of PPP projects, and later also on loans to private sponsors after formal determination by AIF	Provide cofinancing and act as the lender of record;
			Administer the AIF (including financial management, loan servicing, accounting, and financial reporting) during project administration and evaluation

ADB = Asian Development Bank, AIF = ASEAN Infrastructure Fund, ASEAN = Association of Southeast Asian Nations, PPP = public-private partnership.

Source: Asian Development Bank (2011).

Table 12 shows that Malaysia is the largest core capital contributor (\$150 million) among the ASEAN member countries, followed by Indonesia (\$120 million). ADB contributes an amount equal to that of Malaysia. Myanmar is not a member of AIF at this moment and would only be eligible to borrow once it re-establishes a normal relationship with ADB (and other multilateral and bilateral development agencies) by resolving the arrear issue, and can thus start borrowing from ADB. The reason is that the AIF design requires cofinancing of ADB, thus only ADB members can borrow from the AIF. Myanmar's progress on international community engagement and arrears clearance with ADB will enable the country to eventually join the AIF.

Table 12: ASEAN Infrastructure Fund Core Capital Contributions

Country	Amount (\$ million)
Malaysia	150.0
Indonesia	120.0
Philippines	15.0
Singapore	15.0
Thailand	15.0
Brunei Darussalam	10.0
Viet Nam	10.0
Cambodia	0.1
Lao PDR	0.1
ASEAN Subtotal	335.2
Asian Development Bank (ADB)	150.0
Total Core Capital	485.2

Source: Asian Development Bank (2011).

Looking ahead, the AIF's total lending commitment through 2020 is expected to be about \$4 billion. Assuming the cofinancing ratio between AIF and ADB of about 30:70, the AIF can leverage more than \$13 billion for infrastructure investment by 2020. The AIF is expected to finance about five infrastructure projects each year, with a \$75 million lending cap per project. Projects will be selected based on sound economic and financial rates of return and their potential development impact.

There are several challenges for the AIF. First, a high credit rating is required for the AIF to effectively mobilize foreign exchange reserves while maintaining their eligibility. Second, ADB will have to identify bankable projects, build a project pipeline, and process these projects, based on ADB policies and international best practices. Third, appropriate PPP projects need to be identified and structured. Fourth, to enlarge its impact, ADB (as AIF administrator) must consult with both public institutions and private sector players who are potential partners of the AIF. The immediate task would be to invite the PRC, Japan, and the Republic of Korea (and potentially India) to join the AIF as new capital contributors, but not as beneficiaries.

Lessons from the ASEAN Infrastructure Fund

There are several important benefits in creating the AIF. First, it is not to be a new, elaborate institution, but an outcome of better utilizing the existing institutions to maximize development impact. This means that by saving time and cost, effective and timely infrastructure financing is possible. Second, the AIF can be a catalyst of private sector participation as it can mitigate risks associated with long-gestation projects, providing financing for a portion of PPP; and its solid, transparent legal framework can provide confidence for the private sector, in terms of both investment and business operations. Finally, the AIF can augment the capital base by expanding membership to include non-borrowing shareholders, and it can provide a good model for other parts of Asia and the world to emulate for designing financing schemes for subregional infrastructure development.

In addition, active participation by ADB, as an honest broker, allows it to provide greater institutional and capacity support in many key areas, including identification of priority projects; formulation of a forward-looking project pipeline; undertaking of processing, administration and implementation of the projects; provision of policy, knowledge, and capacity support for member countries; creation of a synergy between hardware and software components of infrastructure; adoption of best practices in social and environmental safeguards; creation of productive relationships with civil society and local communities; coordination with other relevant stakeholders and development agencies, making adjustments as required; and conduct of effective evaluation and audit of projects to ascertain project performance.

4.3 Multilateral Development Bank

A third approach is to establish a multilateral development bank that focuses on Northeast Asia's infrastructure development and connectivity. A Northeast Asian Development Bank (NEADB) has been proposed to help fill the subregion's long-term infrastructure financing needs and thereby to accelerate the subregion's economic development and integration.¹⁶ This idea has been around since at least 1991. Financial resources for infrastructure development would be raised by bond issuance in the international capital markets and intermediated through the bank's lending operations to finance member countries' infrastructure projects in Northeast Asia.

Arguments for a Subregional Multilateral Development Bank

Proponents of a multilateral development bank (Campbell 1993; Katz 1999; Cho and Chang 2011; Cho and Katz 2011) have argued that a new bank is needed to take a major role in financing Northeast Asian infrastructure for several reasons.¹⁷ First, the subregion's

¹⁶ The proposed bank is sometimes called the Northeast Asia Bank for Cooperation and Development.

¹⁷ Asia hosts no subregional multilateral development bank, though other regions in the world have several. Examples of subregional MDBs are the Caribbean Development Bank, Central American Bank for Economic

infrastructure is grossly deficient in terms of what is required to support economic development. As a result, upgrading and expanding the subregion's infrastructure to adequate standards and quality requires large amounts of external long-term financing. Second, private investors, bilateral development agencies, and existing multilateral organizations cannot mobilize a large amount of external long-term financial resources for Northeast Asia, nor can they meet more than a modest share of the subregion's external financing needs. A new development bank could help to mobilize the large volume of external resources required to augment the subregion's infrastructure investment. Third, the World Bank does not include the DPRK as a member, ADB does not include the DPRK and the Russian Federation as members, and EBRD does not include the PRC and the DPRK as members. There is the perception that even MDB member countries are not adequately served: for example, the Northeast PRC has to compete in Beijing for access to ADB and World Bank financing; Mongolia is under-served by the MDBs; and the interests of the Russian Far East are not well addressed by the World Bank or EBRD. The DPRK has no access to any financing from the MDBs. A new subregional multilateral development bank can thus fill the institutional and financing gap by bringing all Northeast Asian countries—particularly the PRC, the DPRK, Mongolia, and the Russian Federation—together as members of a single multilateral organization.

The main work of a new NEADB would be the traditional one performed by the existing MDBs—to obtain funds at the best terms and conditions available in international capital markets, primarily by issuing its own bonds in these markets, and using the proceeds from such borrowing to finance infrastructure investment in Northeast Asia. A distinctive feature of a new bank would be the subregional, rather than national, orientation of the benefits to accrue from the projects and programs it would support. This approach would be based on the view that maximum efficiencies and benefits in the transport, ICT, energy, and environmental sectors can be achieved by planning and undertaking such activities on a subregional basis.

A new bank could also help close some of the subregion's other financing, technical, and institutional gaps. Such additional activities could include financing trade in goods and services and promoting private investment; supporting the software component of infrastructure such as logistics, national pricing (tariff) policies, and transport, energy, and environmental harmonization at the subregional level; strengthening the subregion's institutions and governance (including legal systems, rule of law and commercial practices); expanding capacity building and training programs; improving statistical and informational capabilities; and assisting the design and implementation of cross-border projects.

Capital and Ownership Structure of a Subregional Development Bank

A recent paper by Cho and Katz (2011) suggests an initial capitalization of \$40 billion, of which 50% would be subscribed and paid in for shares over 5 years, and 50% would be subscribed—but not paid in—in the form of callable capital shares. It also suggests the Asian countries' share of the bank's capital to represent 60% (\$24 billion) of the NEADB's total capital, while the 40% balance (\$16 billion) would be available for subscription by non-Asian members. This subregional development bank would supplement, but not supplant, the financing provided by the existing MDBs, such as the World Bank, ADB, and EBRD.

The proposed initial capitalization of \$40 billion is very large in comparison to those of existing MDBs, particularly subregional MDBs. Table 13 shows that the size of capital for the World Bank is large at \$205 billion, followed by ADB (\$162 billion), the Inter-American Development

Integration, Development Bank of Latin America (Corporación Andina de Fomento), East African Development Bank, and West African Development Bank.

Bank (\$105 billion), the African Development Bank (\$56 billion), the EBRD (\$37 billion), and the Islamic Development Bank (\$28 billion). Subregional MDBs have much smaller capital, ranging from \$0.5 billion (East African Development Bank) to \$5 billion (Development Bank of Latin America). Considering that ADB's capital base was only \$61 billion in 2009, the proposed capital size of \$40 billion for a new subregional bank may be too large. One interesting point is that the share of paid-in capital in total capital subscription is typically high for subregional MDBs, particularly in the case of the Development Bank of Latin America (CAF). The proposed subregional bank follows this example.

Table 13: Capital Subscription of the Multilateral Development Banks, 2011

Multilateral Development Bank	Total capital (\$ billion)	Paid-in capital (\$ billion)	Share Paid-in capital (%)
World Bank	205.4	12.4	6.1
Asian Development Bank	162.5	8.2	5.0
Inter-American Development Bank	105.0	4.3	4.1
African Development Bank	56.1	3.8	6.9
European Bank for Reconstruction and Development	36.7	8.0	21.8
Islamic Development Bank	27.7	8.3	29.9
Development Bank of Latin America (CAF)	5.5	3.2	59.2
Central American Bank for Economic Integration	2.0	0.45	22.6
West African Development Bank	1.9	0.49	25.1
Caribbean Development Bank	1.5	0.33	22.0
Eastern and Southern African Trade and Development Bank	1.3	0.26	20.0
East African Development Bank	0.5	0.10	18.9

CAF = Corporación Andina de Fomento.

Source: Author.

Table 14 illustrates hypothetical capital allocation, taking into account suggestions made by Katz (1999) more than 10 years ago.¹⁸ He suggested that the six Northeast Asian countries (the PRC, Japan, the DPRK, the Republic of Korea, Mongolia, and the Russian Federation) as well as most current ADB regional members (including Hong Kong; Taipei, China; Australia; and New Zealand) would become Asian regional shareholders, with the former representing 40% and the latter 20% of total capital subscription. The US, Canada, and the European Union nations were expected to be non-Asian shareholders in a new NEADB. This capital structure was projected to support an initial annual level of bank loans and guarantees for the subregion of 15% of capital, namely about \$6 billion under the proposed \$40 billion capitalization.¹⁹

The role of Japan and the US in a new bank is essential, as they can support bank creditworthiness and functional competence of operations. For a new NEADB to be able to raise sufficient amounts of fund in the international capital markets at low costs, the bank needs to be rated highly by private credit rating agencies. A new bank would require expertise in the areas of portfolio and exposure management, risk management and mitigation, project design and implementation, and environmental and social safeguards. Such expertise is not readily available unless sought in professional markets in the US, Japan, and other developed

¹⁸ In an early paper, Katz (1999) assumed the initial capitalization of \$20 billion and provided a table like Table 13. In constructing Table 13, all numbers, except for ratios, are doubled as the size of the newly proposed capitalization of a new bank (\$40 billion) is twice as much as the initially proposed size.

¹⁹ In his earlier paper, Katz (1996) suggested that the total capitalization of \$15–20 billion could support an initial annual level of bank lending and guarantees of some \$2 or 3 billion.

countries. Without participation by Japan and the US, such a bank cannot function adequately and prudently.

Table 14: Hypothetical Allocation of Shares in a New Northeast Asian Development Bank

Item	Shares		Total amount subscribed (\$ billion)	Total paid-in capital (\$ billion)	Annual Payment (over 5 years) (\$ billion)
	Number ('000)	% of total			
Potential Members					
Northeast Asian Members					
Japan	600	15	6.0	3.0	0.60
PRC	400	10	4.0	2.0	0.40
Russian Federation	280	7	2.8	1.4	0.28
Republic of Korea	200	5	2.0	1.0	0.20
DPRK	80	2	0.8	0.4	0.08
Mongolia	40	1	0.4	0.2	0.04
Northeast Asia Total	1,600	40	16.0	8.0	1.60
Other Asian members	800	20	8.0	4.0	0.80
Asia Total	2,400	60	24.0	12.0	2.40
Non-Asian members	1,600	40	16.0	8.0	1.60
Total	4,000	100	40.0	20.0	4.00

DPRK = Democratic People's Republic of Korea, PRC = People's Republic of China.

Notes:

1. Capitalization of \$40 billion evidenced by 4 million shares valued at \$10,000 per share.
2. 60% of shares to be allocated to Asian members and 40% to non-Asian members.
3. Japan would subscribe to the same approximate portion of the total as in the Asian Development Bank. The United States would subscribe to the same approximate portion of the total (10%) as in the European Bank for Reconstruction and Development.
4. The paid-in portion of shares is 50% and its payment is made over 5 years.

Source: Author's adjustment made to Katz (1999).

However, the political environment in the subregion does not appear conducive to US and Japanese support for such a bank. The recent political and security concerns over the DPRK have created tensions between the DPRK and other six-party members, particularly the US and Japan. The lack of progress on economic reforms and market opening in the DPRK would limit the effectiveness of any financial support for the country's development. If Japan and the US do not join a new bank as shareholders and/or if the DPRK does not, or is disallowed to, join a new bank, the value of establishing such a bank would be severely limited.

4.4 Assessment

This section examines pros and cons of the three financing options considered above for Northeast Asia's infrastructure development and connectivity—creating special and/or trust funds in the existing MDBs, a structured infrastructure investment fund supported by the existing MDB(s), and a new subregional development bank—and assesses how the Northeast Asian governments might adopt a strategy to create a multilateral funding mechanism. Table 15 summarizes the pros and cons of these options.

Table 15: Pros and Cons of Three Options—Special and Trust Funds, Infrastructure Investment Fund, and Development Bank

Options	Pros	Cons
Special and Trust Funds in existing MDBs	Easy to set up with voluntary contributions; Availability of additional, concessional resources for recipient governments; Able to rely on knowledge and expertise of the MDBs; Transparent governance in place	Need to replenish fund (often with difficulties) once every several years; Unable to leverage funds in international capital markets due to the lack of capital and other collateral; Possible need for a change in the MDBs’ articles, or for a recipient country to join the MDBs
Infrastructure Investment Fund (NEAIF) supported by an MDB	No need for international treaty or domestic diet approval for creation; More transparent in governance with legal personality and better structure than special and trust funds; Able to generate additional resources, including MDB cofinancing; Able to utilize expertise of the MDB	Need for greater diplomatic negotiations among potential member countries than special and trust funds; Limited ability to leverage capital subscription at least initially; Need for a recipient country to join the supporting MDB
Multilateral Development Bank (NEADB)	Able to secure solid institutional structure and governance and manage lending to recipient countries and related risks; Able to leverage capital subscription and generate a substantial multiplier effect in terms of fund mobilization	Difficult to establish due to fiscal constraints (Japan, US, EU) and cumbersome procedures of international treaty ratification; Need for high credit rating and, thus, strong shareholder backing; Risk of overlap and duplication with businesses of the existing MDBs

EU = European Union, MDB = multilateral development bank, NEADB = Northeast Asian Development Bank, NEAIF = Northeast Asian Infrastructure Fund, US = United States.

Source: Author.

The starting point is the recognition that most national infrastructure projects in the PRC, the Republic of Korea, and the Russian Far East should be financed by their own domestic resources including private sector funds. External financing may be mobilized for most or a large portion of national infrastructure projects in the DPRK and Mongolia—given their financing constraints—as well as high-priority subregional cross-border infrastructure projects, including national infrastructure projects that have significant cross-border implications. From this perspective, any of the financing options should target national projects in the DPRK and Mongolia and subregional cross-border projects, while a fraction of national projects in the Northeast PRC and the Russian Far East can also benefit.

Section 2 has argued that roughly \$13 billion might be needed annually for external financing over the next 10 years or so once the DPRK returns to the international community. Without the DPRK, the amount of such financing needed would be about \$6–7 billion. Whether \$13 billion or \$6–7 billion, the required external financing needs can be met, at least partly, by the existing framework of bilateral and multilateral financial support—including the MDBs’ lending and investment—and foreign private investment. Only the remainder will have to be met by the new financing scheme. When special funds and trust funds are inadequate in size to fill the gap, a

well-resourced infrastructure investment fund can mobilize additional financial resources to meet the needs. This argument does not strongly support the idea of establishing another multilateral development bank. In addition, many Group of Seven and other developed country governments view establishing a new intergovernmental organization, like a subregional multilateral development bank, as too cumbersome to be attractive.

It should also be noted that the DPRK is not a member of any MDB, which could be an obstacle to its benefiting from special and trust funds administered by the existing MDBs or an infrastructure investment fund supported by an MDB.²⁰ Given that a large portion of the potential financing needs for infrastructure investment in Northeast Asia is found in the DPRK, it does not make much sense to establish a new subregional bank if the DPRK does not join the bank. In addition, the current political environment is not supportive of the participation of Japan and the US as shareholders in a new bank, where the DPRK is a recipient member. For the DPRK to be embraced as a welcome member in the existing MDBs, the country needs to forge a healthy and productive relationship with the international community and embark on significant economic reforms and market opening.²¹

Recommended Strategy for Northeast Asia

So a sensible strategy for the Northeast Asian economies would be to begin with setting up special and/or trust funds in the existing MDBs to support subregional cross-border infrastructure investment and connectivity. While these funds are encouraged to work with the GTI, they will not be able to assist the DPRK in strengthening infrastructure connectivity with other Northeast Asian economies as long as the country remains isolated from the international community. For the DPRK to be able to receive concessional funding from special and/or trust funds, the country must do some homework. First, it must return to the GTI as a full member. Second, it must establish normal diplomatic relationships with the US and Japan and show that it becomes a peaceful nation ready to cooperate with neighboring countries and the international community. Third, it must express the intention to join the existing MDBs, such as the World Bank and ADB, and be supported by their major shareholders, including the US and Japan.

Once sufficient confidence and mutual trust is built among the Northeast Asian countries and funding limitations become apparent under the special and/or trust fund arrangement, the subregion's governments may consider creating their own infrastructure investment fund. What needs to be emphasized is that the creation of a new infrastructure fund is not warranted if its only objective is to mobilize financial resources. More important is to nurture a political environment where participating countries are willing to cooperate for the common good of the subregion. ASEAN was able to set up a fund after 45 years of cooperation and trust building processes. Other subregional groups in Asia have not set up such infrastructure investment funds. So, creating a Northeast Asian infrastructure fund would require a firm and enduring process of collaboration and trust building that has yet to start.

²⁰ ADB and EBRD may be able to extend TA and financial support for the DPRK through trust and/or special funds even if the country remains a non-member of these banks. However, such operations would require substantial shareholder support, which would certainly demand the DPRK to normalize political and diplomatic relations with the international community, particularly the US and Japan, to embark on transition to democracy (in the case of EBRD) and a market economy, and to be ready to join the banks.

²¹ The recent development of nuclear weapons and ballistic missiles by the DPRK have created tensions with the international community, particularly the US and Japan. Japan also has the unresolved issue of the abduction of Japanese nationals. The lack of progress on economic reforms and market opening in the DPRK would also be a concern from the developmental perspective.

To induce Japan to be an active member of the proposed infrastructure investment fund, the DPRK must demonstrate that it is a worthy neighbor to support and several Japan-related projects must be designed, such as the Busan-Fukuoka cross-border cooperation project, the Russian Federation-Japan oil and gas pipeline project, and the Mongolia-Japan cross-border transport project that would go through the PRC. These would benefit Japan, particularly the Japanese local economies along the Sea of Japan, as they can gain from stronger connection with other Northeast Asian economies in terms of transport, energy, and tourism (Saito 2011).

To summarize, there is no compelling case for establishing another development bank even if it would focus on the Northeast Asia subregion and even when the DPRK fully returns to the international community as a cooperative and responsible country. First, the existing MDBs (such as the World Bank, ADB, and EBRD) can provide financial support for subregional infrastructure development and connectivity. Second, the proposed Northeast Asian infrastructure investment fund, similar to the AIF, can leverage additional resources by working with all stakeholders—the private sector, multilateral organizations (such as the MDBs and UNDP), and bilateral development agencies—to finance high-priority national and cross-border infrastructure projects in the subregion.

5. FRAMEWORK FOR INFRASTRUCTURE FINANCING IN NORTHEAST ASIA

5.1 Importance of Policy Dialogue

Northeast Asian countries face wide-ranging policy challenges—including trade and investment integration, subregional infrastructure development and connectivity, energy and the environment, and financing mechanisms—and need to strengthen comprehensive policy dialogue processes to tackle common issues of mutual interest.

The first challenge is trade and investment cooperation. There is a need to conclude an economic partnership agreement among the PRC, Japan, and the Republic of Korea (CJK EPA). This agreement should address not only reduction of tariffs but also elimination of non-tariff barriers, liberalization of services trade and investment, protection of intellectual property rights, competition policy, and dispute settlements. Once a CJK EPA is formed, there is scope to connect it with ASEAN+1 free trade agreements and forge a Regional Comprehensive Economic Partnership among the ASEAN+6 countries.

The second challenge is the development of Northeast Asian infrastructure and strengthening of subregional connectivity. To sustain economic development, there is a need to significantly increase infrastructure investment in transport, ICT, energy, the environment, etc. The demand for infrastructure services in Northeast Asian cities is soaring as a result of rapid urbanization and rising population density, while investment in basic infrastructure in rural areas is crucial to narrow the rural-urban divide. Both the quantity and quality of infrastructure must improve to support economic development and private sector-driven economic growth. Subregional infrastructure development and connectivity also helps strengthen connectivity with the rest of Asia and the world.

The third challenge is the promotion of energy security—through increased supply of energy and the adoption of energy-saving technologies—and the protection of the environment. Rising energy demand in the PRC, Japan, and the Republic of Korea can be met, at least partially, by building oil and gas pipelines that connect Eastern Siberia and the Russian Far East with these

three countries. Given the rapid rise in energy consumption, primarily driven by the PRC's surging demand, and the consequent rise in emissions of carbon dioxide and other pollutants, it is important to develop alternative clean energy and improve energy efficiency to help achieve sustainable economic development.

The fourth challenge is the exploration of various possible financing modalities to support these subregional cooperation efforts. One way is to utilize domestic financial markets (banks and bond markets) and institutional investors (such as pension funds) to mobilize local-currency domestic savings for long-term investment in infrastructure, energy, and environmental improvement. A second way is to mobilize financial resources through the existing MDBs and bilateral agencies. A third, complementary way is to establish a subregional cooperative mechanism to finance high-priority national and cross-border investment projects, such as transport facilities, power distribution networks, oil and gas pipelines, and ICT connections.

The DPRK should be encouraged to participate in these comprehensive policy dialogue processes. The successful infrastructure cooperation in other subregions in Asia shows the value of enhancing subregional connectivity through trade and investment liberalization, economic corridors supported by transit and customs facilitation, and institutional harmonization.²² Similar serious efforts are needed to connect Northeast Asian economies with each other and with other economies outside the subregion. Various ministries need to be actively involved and coordinated as in the case of the GMS and CAREC.

5.2 Northeast Asian Infrastructure Forum

It would be desirable for the subregion to set up a Northeast Asian infrastructure forum. This forum would coordinate and integrate the existing infrastructure systems into a subregionally coherent infrastructure network; identify and prioritize new national and cross-border infrastructure projects (railways, roads, ports, rivers, energy transport, etc.); and channel the necessary funds for these purposes. All stakeholders should join, including national governments; multilateral organizations and forums (the World Bank, ADB, EBRD, the United Nations Economic and Social Commission for Asia and the Pacific [UNESCAP], UNDP, and the GTI); bilateral organizations (Japan International Cooperation Agency [JICA], Japan Bank for International Cooperation [JBIC], Korea International Cooperation Agency [KOICA], Korea Eximbank, China Development Bank, and Eximbank of China); private sector players; and civil society members. The forum's perspective should not be limited to subregional infrastructure, but should have a long-run strategic view of connecting Northeast Asia with other parts of Asia.

One of the most immediate tasks of the proposed forum would be to make a comprehensive needs assessment of infrastructure investment in Northeast Asia, both at the national and subregional levels and in key sectors (transport, energy, ICT, and the environment). The next task is to produce a strategic framework to create a seamless Northeast Asia as an integrated subregion and then identify high-priority national and cross-border infrastructure projects. This type of comprehensive analysis is highly needed, given the fragmented nature of information available today.

The proposed forum supports a top-down approach to subregional infrastructure development and connectivity, complementing the previously adopted bottom-up, often ad hoc approach. It is expected to facilitate the emergence of:

²² Kuroda, Kawai, and Nangia (2008) discussed the importance of collaboration of all stakeholders in the construction of cross-border infrastructure, including the hardware and software components.

- (i) A common vision of an integrated subregion supported by strong political leadership and a shared commitment to subregional integration;
- (ii) A common subregional infrastructure strategy;
- (iii) Harmonization of laws, regulations, procedures, and practices to facilitate the creation of an integrated subregion;
- (iv) Institutional arrangements for planning and implementing coherent subregional infrastructure projects;
- (v) Coordination of and communication with stakeholders, including governments, local communities, and civil society; and
- (vi) Effective financing modalities.

Essentially, a new Northeast Asian infrastructure forum would bring together all the key stakeholders in the subregion, to help build consensus on, prioritize, and coordinate subregional infrastructure plans. It could also develop harmonized standards, based on international best practices where possible, for regulatory and legal issues, as well as a common framework for handling and mitigating negative environmental and social impacts. Within the forum, sectoral subforums could also be developed—for transport, energy, ICT, and the environment, for instance—as well as subforums for soft aspects of infrastructure connectivity, such as regulatory and legal issues. Many of these should build on the achievements made by the GTI.

5.3 Northeast Asian Infrastructure Fund

Northeast Asian governments may adopt a cooperative financing mechanism to mobilize external financial resources for the subregion's infrastructure development and connectivity. Among the three options considered in the previous section, this paper strongly recommends starting with setting up special and/or trust funds at ADB, EBRD, and possibly the World Bank. For the DPRK to enjoy the benefits of such funds, it must demonstrate that it is fully committed to becoming a peaceful, responsible, market-oriented nation. Once sufficient confidence and trust has been built and financial constraints prove binding under special and/or trust funds, the subregional governments may consider creating a new infrastructure investment fund, called the Northeast Asian Infrastructure Fund (NEAIF), following the good example of the AIF. The paper does not recommend the establishment of a new subregional development bank, given the important financing role of the existing MDBs and the prospective ability of an NEAIF to work with bilateral and multilateral development agencies and meet the demand for national and cross-border infrastructure investment. In addition, considering that the developed countries are increasingly reluctant to establish new multilateral organizations, such as a subregional development bank, the proposed NEAIF would be the most effective arrangement that is feasible.

In a new NEAIF, the Northeast Asian sovereigns will be the primary contributors of core equity as well as beneficiaries, while leaving room for other countries and international organizations to join as equity capital contributors. As in the case of the AIF, debt may be sold to monetary authorities with ample foreign exchange reserves, and cofinancing may be envisaged by bilaterals and multilaterals for infrastructure investment. ADB, EBRD, and possibly the World Bank may join as shareholders and form a joint administrative body. The reason for the recommended participation of the EBRD is the presence of the Russian Federation, which is not

an ADB member. The participation of these MDBs would greatly help catalyze private investment.²³

An important advantage of this approach is that the membership, operations, and governance structure of the proposed NEAIF can be determined in a flexible manner. However, there are a few disadvantages. One is that preparation to create the fund may still take time (it took 2 years for the AIF to be set up). Another is that there may be a concern, held by a small country like Mongolia, that a large country like the PRC—being the hub of Northeast Asian connectivity—may absorb a substantial amount of financial resources for infrastructure development, even if a new NEAIF invests in a small portion of the PRC's national projects and focuses on national projects in the DPRK and Mongolia and on subregional cross-border infrastructure projects. To avoid concerns that the PRC may swamp investment demand and too much lending may go to the Northeast PRC, a country exposure limit could be imposed on lending from a NEAIF as in the case of the AIF (30% of total lending).

At this point, the DPRK is not eligible to join such a fund, but can join it once the country is accepted by the international community after significantly improving political and diplomatic relationships with other six-party members, particularly the US and Japan, and embarking on substantial economic reforms and trade and investment liberalization programs. Then chances are that the large infrastructure investment needs could be met by external financial support, including through a new NEAIF.

6. CONCLUSION

Northeast Asia—comprising the Northeast PRC, Japan, the DPRK, the Republic of Korea, Mongolia, and the Russian Far East—needs to start intensive policy dialogue on trade and investment integration, infrastructure development and connectivity, energy security, environmental improvement, and cooperative financing modalities. Subregional infrastructure cooperation is essential to adequately invest in cross-border infrastructure and strengthen subregional connectivity. Reducing free rider incentives and weak links in transport systems, energy distribution networks and ICT connections would be essential. This would require a significant degree of mutual trust and confidence among the countries involved. Thus, it is time to set up a Northeast Asian infrastructure forum and consider a cooperative financing mechanism targeted at high-priority national and cross-border infrastructure projects. Public sector support is essential, but engagement with the private sector through PPP is increasingly important.

Relying on various previously published estimates, this paper has found that the total infrastructure investment needs for the subregion excluding Japan and the Republic of Korea (in transport, energy, ICT, and the environment) could be in the order of \$63 billion per year over the next 10 years or so, and of this total governments in the subregion will have to mobilize external financial resources of \$13 billion per year. However, these estimates are in no way

²³ One may argue that rather than creating a new infrastructure investment fund in Northeast Asia, the AIF could be expanded to absorb the Northeast Asian countries as new members. There are several advantages in this option. One is that preparation does not take much time as the existing AIF framework can be utilized. Another is that this would be a first step toward connecting Asia's subregions through an infrastructure investment fund. However, the Russian Federation, a non-ADB member country, cannot join as the AIF presupposes cofinancing with ADB. The DPRK, which is not a member of the Bretton Woods institutions (IMF and the World Bank) nor a member of ADB, needs to make efforts to become an ADB member by first joining the IMF and the World Bank. In addition, ASEAN countries may not agree to membership expansion as these Northeast Asian countries may dominate the share-ownership of and borrowing from the fund.

accurate. The most immediate tasks of the proposed Northeast Asian infrastructure forum would be to make a comprehensive needs assessment of infrastructure development in Northeast Asia, both at the national and subregional levels and in key sectors—particularly transport, energy, ICT, and the environment—and to identify “bankable” high-priority national and cross-border infrastructure projects. This type of comprehensive analysis is highly desirable, given the fragmented nature of information available today.

Having considered three options for a cooperative infrastructure financing mechanism in Northeast Asia, the paper has suggested a two-step approach. First, the subregion’s governments may set up special and/or trust funds in ADB, EBRD, and possibly the World Bank so that concessional resources can be mobilized for several national and subregional infrastructure projects. The DPRK can benefit from such funds if it fulfills the conditions for joining the hosting MDBs by forging normal diplomatic relations with the international community, particularly the US and Japan, and undertaking market-oriented economic reforms. Second, once sufficient confidence and mutual trust has been built among the economies in the subregion and special and trust funds and MDB resources cannot fully meet the subregion’s financing needs, the Northeast Asian governments may create a well-resourced infrastructure investment fund, similar to the AIF. This investment fund, NEAIF, could help finance most of the national infrastructure projects of the DPRK (assuming the country joins the MDBs) and Mongolia, as well as high-priority subregional cross-border infrastructure projects. A large portion of national infrastructure projects in the Northeast PRC and the Russian Far East would be financed by their respective domestic resources. The paper has recommended against the establishment of a new subregional development bank (NEADB) as the existing MDBs and the proposed NEAIF will be able to address the financing needs by working with all development stakeholders including the private sector.

The current political environment is not favorable to the DPRK’s participation in special funds, trust funds, an infrastructure investment fund, or MDBs. The DPRK may join such a financing mechanism and organization only after it has been accepted by the international community as a cooperative and responsible country and embarks on economic reforms and market opening. Setting up special and/or trust funds even before the DPRK can join them could be useful to induce the country to make efforts to eventually return to the international community. This result would contribute to the transformation of Northeast Asia into a peaceful, prosperous, and integrated subregion.

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