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Estimating Demand for Infrastructure in Energy, Transport, Telecommunications, Water and Sanitation in Asia and the Pacific: 2010-2020

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Abstract*

Infrastructure plays a key role in promoting and sustaining rapid economic growth. Properly designed infrastructure can also make growth more inclusive by sharing its benefits with poorer groups and communities, especially by connecting remote areas and small and landlocked countries to major business centers. Even if the Asia-Pacific region has witnessed progress in infrastructure development, the growth of infrastructure lags behind its economic growth, and also behind international standards of infrastructure quantity and quality. Inadequate infrastructure can hamper the potential economic growth of Asian countries, weaken their international competitiveness, and adversely affect their poverty reduction efforts. The circumstances and effects of the recent economic and financial crisis provide a number of reasons to further develop national and regional infrastructure in Asia. Among these reasons is that regional infrastructure enhances competitiveness and productivity, which could help in economic recovery and in sustaining growth in the medium to long-term. Regional infrastructure also helps increase standard of living and reduce poverty by connecting isolated places and people with major economic centers and markets, narrowing the development gap among Asian economies. This paper estimates the need for infrastructure investment, including energy, transport, telecommunications, water, and sanitation during 2010-2020, in order to meet growing demands for services and facilitate further rapid growth in the region. By using “top-down” and “bottom-up” approaches, this paper provides a comprehensive estimate of Asia’s need for infrastructure services. The estimates show that developing countries in Asia require financing of US\$776 billion per year for national (US\$747 billion) and regional (US\$29 billion) infrastructure during 2010-2020 to meet growing demand.

JEL Classification: L9, O1, O2, R11, R4

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Contents

| | | |
|-----|---|----|
| 1. | Introduction..... | 3 |
| 2. | Infrastructure Connectivity and Competitiveness | 6 |
| 3. | Methodology for Estimation | 9 |
| 3.1 | “Top-down” Approach: Infrastructure Needs at the National Level | 9 |
| 3.2 | “Bottom-up” Approach: Regional Financing Needs Estimation | 10 |
| 3.3 | Scenario-Building: Demand for Regional Infrastructure..... | 11 |
| 4. | National Financing Needs for Connectivity: 2010-2020..... | 11 |
| 5. | Infrastructure Needs for Regional Projects for Asian Connectivity: 2010-2020..... | 16 |
| 5.1 | Pan-Asian Transport Network | 17 |
| 5.2 | Infrastructure Projects at the Sub-regional Level..... | 18 |
| 5.3 | Investment Needs for High Priority Projects | 19 |
| 6. | Challenges For Regional Infrastructure Financing | 20 |
| | References | 22 |
| | Appendix..... | 25 |
| | Appendix 1: Regional and Sub-regional Groupings and Infrastructure | 25 |
| | Cooperation Programs..... | 25 |
| | Appendix 2. Compendium of Investment Needs of Regional Infrastructure..... | 27 |
| | Projects by Sub-region and by Program | 27 |

1. INTRODUCTION

Infrastructure plays a key role in promoting and sustaining rapid economic growth. Properly designed infrastructure can also make growth more inclusive by sharing its benefits with poorer groups and communities, especially by connecting remote areas and small and landlocked countries to major business centers. Studies in several developing Asian countries illustrate how infrastructure, particularly road transport and electricity, help in reducing poverty (ADB, JBIC, and World Bank 2005). Even if the Asia-Pacific region has witnessed progress in infrastructure development, the growth of infrastructure lags behind its economic growth, and also behind international standards of infrastructure quantity and quality. Inadequate infrastructure can hamper the potential economic growth of Asian countries, weaken their international competitiveness, and adversely affect their poverty reduction efforts. Moreover, it is noteworthy to stress that the Asia-Pacific region accounts for about 60% of the world's population and 30% of the world's total land area, with nearly two-thirds of the world's poor found in developing Asia (ADB 2007).

Interestingly, 10 out of 12 economies globally with GDP growth rates of 7% or more over the past 25 years are in Asia¹ (Commission on Growth and Development 2008). During this period of rapid economic growth, Asia has increasingly integrated into the global economy. It has become the world's factory by pursuing outward-oriented development strategies, establishing global production networks and supply chains, and building needed infrastructure. Asian regional economies have succeeded and benefited from regionally producing and trading intermediate goods, then exporting final goods to the West.

However, the recent global crisis has reduced Asia's external demand, industrial production, investment and employment, adversely affecting consumer spending. The prospect of a prolonged downturn in major advanced markets as a result of crisis underscores the urgent need for rebalancing Asia's growth and increasing investments in highly productive sectors, such as infrastructure, to facilitate greater domestic and regional demand. Infrastructure investment in particular has also played a major role in fiscal stimulus packages used by Asian economies to mitigate the negative effects of the global crisis. These infrastructure investments have been utilized in key sectors, such as transportation; energy; information technology and communications (ITC); and water and sanitation, in both rural and urban projects (Table 1).

¹ Including Bangladesh, People's Republic of China (PRC), Thailand, Indonesia, Japan, Republic of Korea (Korea), Malaysia, Singapore, Taipei, China, and Hong Kong, China.

Table 1: Infrastructure Investment in the Stimulus Packages of the Major Asian Economies (US\$ billion)

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

Sources: Author's estimations from data in: Kang (2010); Sugimoto (2010); Kumar and Soumya (2010); Patunru and Zetha (2010); Nguyen, Nguyen, and Nguyen (2010); Jitsuchon (2010); World Bank (2009b); FAITC (2009); Alibaba.com (2008); IFCE (2009); Economy Watch (2010); (Tabuchi 2009) and ADB (2009a). <http://www.economywatch.com/economic-stimulus/world-economic-stimulus/south-korea.html><http://www.nytimes.com/2009/04/09/business/global/09yen.html>

The circumstances and effects of the recent economic and financial crisis provide a number of reasons to further develop national and regional infrastructure (see Box 1 for definition) in Asia. Among these reasons is that regional infrastructure enhances competitiveness and productivity, which could help in economic recovery and in sustaining growth in the medium to long-term. Regional infrastructure also helps increase standard of living and reduce poverty by connecting isolated places and people with major economic centers and markets, narrowing the development gap among Asian economies. It also promotes environmental sustainability, facilitates regional trade integration and the acceleration of regional cooperation, and helps increase regional demand and intraregional trade necessary to rebalance Asia's economic growth.

Box 1: Defining Regional Infrastructure

“A regional (cross-border or transnational) infrastructure project is defined as a project with activities such as physical construction works and coordinated actions related to policies and procedures, spanning over two or more countries, or a national infrastructure project that has significant cross-border impact. A national infrastructure project has significant cross-border impact if it satisfies one or more of the following criteria: (i) The planning and implementation of a project that involves cooperation and coordination between two or more countries; (ii) As per the pre-determined plan, a project that produces significant sales of goods or services across regional borders, where significant means at least twenty-percent or more of the total sales; (iii) A project that involves the construction of specific infrastructure, such as a road, a bridge, or a tunnel located on or largely on the territory of a country near the border and is necessary to link the country to the network of a neighboring country or a third country” (Bhattacharyay 2008).

Despite relatively good growth in infrastructure investment and development during the last few decades, the region still faces extensive basic infrastructure needs. For instance, 1.5 billion people in Asia and the Pacific have no access to improved sanitation, 638 million have no access to improved drinking water, and 930 million have no access to electricity services (IMF 2006). Only 3 out of every 10 people have access to telephone services and only 53.4% of the total road network in Asia of 5.66 million km is paved (ADB 2007). Moreover, the cost of maintaining existing infrastructure continues to rise. Fast growing economies like PRC, India, Thailand, Indonesia, the Philippines, and Viet Nam are seeing their countries’ aging infrastructure and limited capacities being stretched and coming under extreme pressure. Therefore, in spite of the large infrastructure investment under the aforementioned stimulus packages, the financing needs for national and regional projects are huge.

It is very important to assess the magnitude of national infrastructure financing needs and financing gaps of Asian economies by key sectors such as transport, energy, telecommunications, water and sanitation as well as the regional infrastructure financing needs for identified regional projects.

This paper attempts to estimate national infrastructure financing needs for 32 Asian developing economies during 2010-2020 using a “top down” econometric approach based on the projected growth of key economic parameters such as GDP and population. The selected countries by sub region are as follows:

- Central Asia – Afghanistan, Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan, and Uzbekistan;
- Southeast Asia - Cambodia, Indonesia, Philippines, Malaysia, Myanmar, Viet Nam, Lao PDR, and Thailand;
- East Asia and the Pacific - PRC, Mongolia, Fiji, Kiribati, Marshall Islands, Papua New Guinea (PNG), Samoa, Solomon Islands, Tonga, and Vanuatu; and
- South Asia - Bangladesh, Bhutan, India, Nepal, and Sri Lanka.

The paper also estimates, for the first time, the financing needs for regional infrastructure projects using a “bottom-up” approach based on identified pipeline regional infrastructure projects across Asia. Section 2 discusses the concept of pan-Asia infrastructure connectivity and its relationship with quality of infrastructure and global competitiveness. The next section presents the methodologies used for estimating financing needs for national and regional infrastructure projects. Section 4 presents the financing needs of national infrastructure of 32 Asian economies by sector. The financing needs for regional infrastructure by sector and sub region are presented in Section 5. Section 6 concludes with an examination of the broad challenges for infrastructure financing in Asia.

2. INFRASTRUCTURE CONNECTIVITY AND COMPETITIVENESS

Developing infrastructure networks and connectivity are essential to integrating core and wider economic activities and basic services in the region. The latest World Economic Forum (2010) Global Competitiveness Report, and the Infrastructure Quality assessment included within, illustrates the importance of infrastructure quality in global competitiveness (Table 2). Moreover, various studies have also shown that the quality and extensiveness of infrastructure networks greatly impact economic growth and reduce income inequalities and poverty (ADB/ADBI 2009).

Table 2: Ranking and Score of Global Competitiveness Index and Infrastructure Quality Assessment of Selected Countries in Asia

| Economy | 2009/2010 | | | |
|--|-----------|-------------|----------------|-------------|
| | GCI | | Infrastructure | |
| | Rank | Score | Rank | Score |
| Developed and Newly Industrialized Asia (Average) | | 5.25 | | 5.85 |
| Australia | 15 | 5.15 | 25 | 5.19 |
| Hong Kong, China | 11 | 5.22 | 2 | 6.54 |
| Japan | 8 | 5.37 | 13 | 5.83 |
| Korea | 19 | 5.00 | 17 | 5.60 |
| Singapore | 3 | 5.55 | 4 | 6.35 |
| Taipei, China | 12 | 5.20 | 16 | 5.60 |
| Developing and Emerging Asia (Average) | | 4.10 | | 3.44 |
| Bangladesh | 106 | 3.55 | 126 | 2.39 |
| India | 49 | 4.30 | 76 | 3.41 |
| Indonesia | 54 | 4.26 | 84 | 3.20 |
| Malaysia | 24 | 4.87 | 26 | 5.05 |
| Nepal | 125 | 3.34 | 131 | 2.03 |
| Pakistan | 101 | 3.58 | 89 | 3.06 |
| Philippines | 87 | 3.90 | 98 | 2.91 |
| PRC | 29 | 4.74 | 46 | 4.31 |
| Sri Lanka | 79 | 4.01 | 64 | 3.88 |
| Thailand | 36 | 4.56 | 40 | 4.57 |
| Viet Nam | 75 | 4.03 | 94 | 3.00 |

Note: Ranking out of 133 total countries surveyed

Score: 1-poorly developed, inefficient; 7-among the best in the world

Source: World Economic Forum (2010)

To date, connectivity has improved across most parts of the Asia-Pacific region, but much still needs to be done. In particular, as shown in Table 3, enhancing transportation and energy infrastructure in developing countries remains a challenge. Asian economies exhibit a wide variation in road and rail densities as well as in rates of electrification. Even though marked improvements in road and electrification have been seen over the last two decades, there is still a long way to go before basic infrastructure needs are fulfilled.

Table 3: Regional Transport Infrastructure

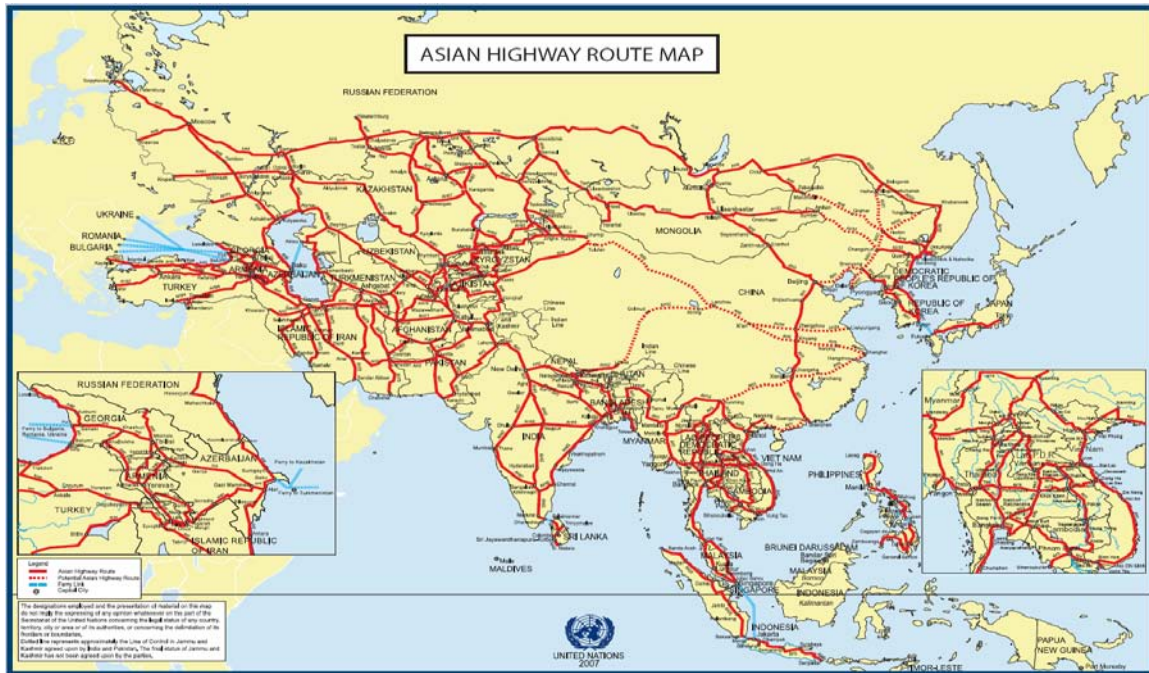
| | Road Density | | | Rail Network Density | | | Household Electrification Rates | | | |
|--------------------------------|----------------------|-------------|--------|----------------------|-------------|--------|---------------------------------|--------|-------------|--------|
| | (km/1000 sq km land) | | | (km/1000 sq km land) | | | (% of Households) | | | |
| | 1990 | Latest Year | | 1990 | Latest Year | | Earliest Year | | Latest Year | |
| Central Asia | | | | | | | | | | |
| Afghanistan | 32 | 65 | (2006) | ... | ... | (2007) | ... | ... | 25 | (1995) |
| Armenia | 273 | 266 | (2006) | 30 | 25 | (2005) | 99 | (2000) | 100 | (2005) |
| Azerbaijan | 630 | 715 | (2004) | ... | 26 | (2006) | 97 | (1999) | 100 | (2006) |
| Georgia | 311 | 293 | (2006) | 23 | 22 | (2007) | ... | ... | 100 | (2002) |
| Kazakhstan | 59 | 34 | (2006) | 5 | 5 | (2007) | ... | ... | ... | ... |
| Kyrgyz Rep. | 99 | 97 | (2001) | ... | ... | ... | 100 | (1997) | 100 | (2002) |
| Pakistan | 220 | 338 | (2006) | 11 | 10 | (2007) | 60 | (1990) | 89 | (2006) |
| Tajikistan | 213 | 198 | (2001) | ... | ... | ... | 97 | (1999) | 99 | (2003) |
| Uzbekistan | 170 | 192 | (2001) | ... | 9 | (2007) | 100 | (1996) | 100 | (2002) |
| East and Southeast Asia | | | | | | | | | | |
| Cambodia | 203 | 217 | (2004) | 3 | 4 | (2005) | 17 | (2000) | 21 | (2005) |
| PRC | 127 | 371 | (2006) | 6 | 7 | (2007) | ... | ... | ... | ... |
| Indonesia | 159 | 216 | (2005) | ... | 3 | (1998) | 49 | (1991) | 91 | (2007) |
| Lao PDR | 61 | 129 | (2006) | ... | ... | ... | ... | ... | 46 | (2002) |
| Malaysia | 262 | 283 | (2005) | 5 | 5 | (2007) | ... | ... | ... | ... |
| Mongolia | 27 | 31 | (2002) | 1 | 1 | (2007) | 67 | (2000) | 86 | (2005) |
| Myanmar | 38 | 41 | (2005) | 5 | ... | ... | ... | ... | 47 | (2002) |
| Philippines | 539 | 671 | (2003) | 2 | 2 | (2006) | 65 | (1993) | 77 | (2003) |
| Thailand | 141 | 352 | (2006) | 8 | 8 | (2006) | ... | ... | 99 | (2005) |
| Viet Nam | 295 | 717 | (2004) | 9 | 10 | (2007) | 78 | (1997) | 96 | (2005) |
| South Asia | | | | | | | | | | |
| Bangladesh | 1444 | 1838 | (2003) | 21 | 22 | (2007) | 18 | (2000) | 47 | (2007) |
| Bhutan | 50 | 171 | (2003) | ... | ... | ... | ... | ... | 41 | (2003) |
| India | 673 | 1116 | (2006) | 21 | 21 | (2007) | 51 | (1991) | 68 | (2005) |
| Nepal | 48 | 121 | (2004) | ... | ... | ... | 18 | (1996) | 61 | (2006) |
| Sri Lanka | 1439 | 1505 | (2003) | 23 | 19 | (2005) | ... | ... | 81 | (2002) |
| The Pacific | | | | | | | | | | |
| Fiji | 167 | 188 | (2001) | ... | ... | ... | ... | ... | 67 | (1996) |
| Kiribati | ... | 827 | (2000) | ... | ... | ... | ... | ... | 39 | (2005) |
| PNG | 41 | 43 | (2001) | ... | ... | ... | ... | ... | 11 | (1996) |
| Samoa | ... | 826 | (2001) | ... | ... | ... | 79 | (1991) | 92 | (2006) |
| Solomon Is. | 43 | 50 | (2001) | ... | ... | ... | ... | ... | 16 | (1999) |
| Timor-Leste | ... | ... | ... | ... | ... | ... | ... | ... | 27 | (2002) |
| Tonga | ... | 944 | (2001) | ... | ... | ... | 80 | (1994) | 89 | (2006) |
| Vanuatu | ... | 88 | (2001) | ... | ... | ... | 18 | (1994) | 19 | (1999) |

Source: ADB (2009b)

The concept of connectivity through the development of regional infrastructure projects or infrastructure that links one country to another is not really new to Asia. History shows that transport connectivity in Asia started with the Silk Road in the 13th Century. The Silk Road used to be the most important cross-border artery and the was an extensive, interconnected network of pan-Asian trade routes linking East, South, Central, and Western Asia. In 1992, the concept of pan-Asia transport connectivity was revived by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP). The Asian Land Transport Infrastructure Development (ALTID) initiative is comprised of three pillars, the Asian Highway (AH), the Trans-Asian Railway (TAR), and the facilitation of land transport projects through intermodal transport terminals (UNESCAP 2010a).

AH (Figure 1) seeks to improve economic links among Asia, Europe, and the Middle East. It is planned as a network of 141,271 km of standardized highways—including 155 cross-border roads—that crisscrosses 32 Asian countries.

Figure 1: Asian Highway Network



Source: UNESCAP (2010b)

The TAR network (Figure 2) would link pan-Asian and pan-European rail networks at various locations, connecting major ports of Asia and Europe and providing landlocked countries with better access to seaports either directly or in conjunction with highways.

Figure 2: Trans-Asian Railway Network



Source: UNESCAP (2010c)

Regional infrastructure projects are usually more complicated and expensive than typical national infrastructure projects. In this context, it is also a complex, yet necessary, exercise to estimate the financing demand for regional projects and national projects with regional implications. It is hoped in this paper that by providing estimates of the needed regional infrastructure financing, it will help to clearly define the issues and challenges at hand and facilitate the planning and development of solutions for identifying appropriate investment strategies and financial resources, as well prioritizing projects for utilization of limited resources.

3. METHODOLOGY FOR ESTIMATION

This section presents methodologies for both “top-down” and “bottom-up” approaches to estimating or determining national and regional infrastructure investment needs respectively for the Asia-Pacific region. While the “top-down” approach utilizes econometric analysis techniques to quantitatively estimate national infrastructure needs and, by extension, regional needs, the “bottom-up” approach reviews infrastructure investment demand at the project level specifically for regional or cross-boarder projects.

3.1 “Top-down” Approach: Infrastructure Needs at the National Level ²

A “top-down” econometric approach has been used to estimate national infrastructure financing needs. A two-step procedure was utilized to develop the forecast. The first step involved creating an econometric model that could be used across countries to project physical capacity needs per sector for each year during the period 2010-2020. Reliability of the model was tested by inputting available historic data through 2007. In the second step, after the projections of the physical capacities were derived, standard unit costs (in 2008 US\$) based on international “best practice” norms were applied to estimate the investment requirements for new capacity. Finally, the report projected the investments required to maintain or replace the existing capacity at the end of its useful life. The national infrastructure estimates were based on the best available GDP growth scenarios. The cumulative financing demand for national infrastructure projects were used as an estimate for the region. The projections covered transport (airports, ports, railways, and roads), telecommunications (landlines and mobile phones), energy (power), and water and sanitation for the 32 developing countries in Asia included in this examination.

The econometric model developed by Fay (2001) was utilized to project the estimated change in demand for infrastructure services in the period 2010 to 2020. The model estimates future demand for infrastructure, where infrastructure services are both demanded as consumption goods by individuals and as inputs into the production process by companies. The model applied in this estimation also drew upon the works of Chatterton and Puerto (2005) and Yepes (2004) to ensure forecasting accuracy. The baseline econometric model is as follows:

$$I_{it}^j = \alpha_1 I_{it-1}^j + \alpha_2 Y_{it} + \alpha_3 A_{it} + \alpha_4 M_{it} + \alpha_5 U_{it} + \alpha_6 P_{it} + \alpha_7 t + D_j + \varepsilon_{it}$$

where,

I_{it}^j is the natural logarithm of demand for infrastructure stock of type j in country i at time t ,

Y is the natural logarithm of income per capita,

A is the natural logarithm of the share of agriculture value added in GDP,

M is the natural logarithm of the share of manufacturing value added in GDP,

U is the natural logarithm of urbanization,

² Based on ADBI commissioned report by Centennial Group Holdings (2009).

P is the natural logarithm of population density, and
 D_j is a country fixed effect, and
 ε_{it} is the error term.

The given equation can be interpreted as a law of motion for infrastructure stock. The data was organized as an unbalanced panel with yearly observations for the period 1960 to 2005 from a number of databases, including from the World Bank, the Energy Information Administration, the Millennium Development Goals Indicators, and the United Nations Statistics Division.

Projections for the independent variables were used to estimate the values of the infrastructure variables in the period 2009-2020. These variables included land area, population, urbanization, share of agriculture value-added in GDP, share of manufacturing value-added in GDP, and GDP annual growth. Land area is assumed to be constant and equal to 2005 figures in each country. The sources of projections for population and GDP growth include the World Bank, ADB, and the International Monetary Fund (IMF). The growth rates projected by IMF's World Economic Outlook (WEO) for 2008-2013 were used as the base case (IMF 2006). A cap of 900 mobile phones and 400 fixed lines per 1000 people was imposed for the telecommunication services. For the replacement costs, power, roads, rail, airports, ports were assumed to be 2% of the stock value, while water and telecoms replacement costs were assumed to 3% and 8% of the stock value, respectively. Fixed linear regressions employing time and its square (as necessary) as explanatory variables were used, using historic trends to predict each variable.

3.2 “Bottom-up” Approach: Regional Financing Needs Estimation

The estimation of future regional infrastructure demand is likewise very complicated and no well-accepted econometric method is available. The actual realization of a regional project depends on many economic and non-economic factors. Therefore, a “bottom-up” methodology was used in this stage. The “bottom-up” methodology is a conservative approach that identifies individual infrastructure projects and estimate costs of their implementation. The compiled project information is then used to obtain the total infrastructure service demand by region, by sub-regional program, and by sector.

This section gives an overview of the financing need per type of project by region. It tries to avoid usual assumptions to project demand and instead identifies economically viable projects, estimates the costs of their implementation, and combines all relevant infrastructure projects (e.g., energy; transport; telecommunications; ICT; and logistics and trade facilitation) that have already been entered into the planning stages throughout Asia. The study utilized varied sources, including multilateral and bilateral development institutions. In a few exceptional cases, the cost investment figures came from non-traditional sources like media reports.

The investment estimations account for regional differences as well as priority investments in planned infrastructure projects, and breaks down demand into the following groups and programs³:

- (i) Pan-Asian, such as the ALTID project;
- (ii) Sub-regional, including the Greater Mekong Sub-region (GMS), the Central Asia Regional Economic Council (CAREC), the South Asia Sub-regional Economic Council (SASEC), and the Pacific Countries; and
- (iii) Other sub-regional and cross-sub regional programs, such as within and between South Asia, Central Asia, Central-South Asia, East Asia-Southeast Asia, and the Association for Southeast Asian Nations (ASEAN).

³ The lists of countries included in all of the groupings and programs can be found in Appendix 1 of this paper.

The limitations of this approach include not taking into account the regional infrastructure projects that are national projects with significant cross-border impact such as airports, seaports, roads connecting to borders, airports and seaports, and power generation projects supplying power to neighboring countries. In addition, data on projects identified or planned may not be available or may be confidential. Furthermore, large economies (such as PRC and India) may have some sizable regional transport and energy projects with their neighbors under their national plans that are not covered under pan-Asia and sub-regional plans and programs. Finally, issues may arise as a result of inaccurate cost estimates and failure to actually initiate or implement of some of the projects due to unforeseen reasons and non-economic factors in the future.

As the estimation of national infrastructure financing needs is based on ‘top-down’ econometric method, it is not possible to identify specific national projects that are regional in nature. However, the econometric estimation of national airports and seaports can be used as regional infrastructure financing needs.

3.3 Scenario-Building: Demand for Regional Infrastructure

The mixture of ‘top-bottom’ and ‘bottom-up’ approaches simply means that the source of information came from both the estimation of national infrastructure needs based on macroeconomic and growth factors and the utilization of data provided by organizations and countries involved in the implementation of the regional projects. Given the goal of estimating regional demand, only infrastructure projects involving coordination between two or more countries were included in the ‘bottom-up’ approach. The calculation provides an estimation on the cost per project and per sector, and then of the cumulative cost at the national, sub-regional, and regional levels. The annual average costs per year are derived from the estimated total cost for the period.

To provide the most realistic picture of Asia’s investment requirements in the ‘top-down’ approach, three sets of estimates were created. Scenarios including a ‘low-case’, a ‘base-case’, and a ‘high-case’ were derived from econometric models in which adjustments were made to accommodate possible slower and faster than projected GDP growth and/or managerial constraints. It is important to note though that these projections are estimates of investments required to meet the needs of the countries. Estimates are based on a replacement cost factor of 2% of existing infrastructure stock in most sectors and as such could be very conservative. Actual unit costs would typically vary by country according to domestic conditions and both new investment and replacement costs may turn out to be higher than international best practice norms used to arrive at the estimations. Moreover, the ‘top-down’, order-of-magnitude estimates must be regarded as a reference point rather than a substitute for more precise, ‘bottom-up’, country and sector specific estimates. For the remainder of this paper, all data references and tables pertaining to the ‘top-down’ estimations show the most conservative, ‘low-case’ scenario results.

4. NATIONAL FINANCING NEEDS FOR CONNECTIVITY: 2010-2020

During the ten-year period of 2010-2020, the 32 ADB developing member countries covered in this paper are expected to need almost US\$8.22 trillion (in 2008 US\$) for infrastructure investment. This amounts to US\$747 billion in annual investment needed over 2010-2020. Around 68% of this is needed for new capacity investments in infrastructure and around 32% is needed for maintenance or replacement of existing assets. In general, the total projected infrastructure investment requirements are equal to about 6.5% of Asian estimated 2010-2020 GDP. Of the total investment, approximately 49% is estimated to be needed for energy infrastructure, 35% for transport, 13% for ITC, and 3% for water and sanitation. Among the

countries included in the study, PRC, India, and Indonesia represent the top three countries in terms of amount of infrastructure investment needed. Overall, the top 11 countries constitute 97% of Asia's total infrastructure investment needs, most of which are in Southeast Asia and South Asia (Table 4).

Table 4: National Infrastructure Investment Needs in Asia: 2010-2020

| Country / Sub region | % of Total Asian Investment Need | Estimated Investment Needs (US\$ millions) | Investments as Percentage of Total | | Total Investment per Year | Total Investment per Capita (US\$) | 2008 GDP Per Capita (Constant 2000 US\$) |
|--------------------------------|----------------------------------|--|------------------------------------|-------------|---------------------------|------------------------------------|--|
| | | | New Capacity | Maintenance | | | |
| Central Asia | 4.544% | 373,657 | 54% | 46% | 33,969 | 1,403 | 753 |
| Afghanistan | 0.318% | 26,142 | 57% | 43% | 2,377 | 901 | - |
| Armenia | 0.051% | 4,179 | 41% | 59% | 380 | 1,358 | 1,520 |
| Azerbaijan | 0.344% | 28,317 | 64% | 36% | 2,574 | 3,262 | 2,131 |
| Georgia | 0.060% | 4,901 | 24% | 76% | 446 | 1,138 | 1,268 |
| Kazakhstan | 0.846% | 69,538 | 61% | 39% | 6,322 | 4,436 | 2,378 |
| Kyrgyz Rep. | 0.107% | 8,789 | 38% | 62% | 799 | 1,665 | 376 |
| Pakistan | 2.172% | 178,558 | 53% | 47% | 16,233 | 1,075 | 650 |
| Tajikistan | 0.139% | 11,468 | 47% | 53% | 1,043 | 1,678 | 245 |
| Uzbekistan | 0.508% | 41,764 | 48% | 52% | 3,797 | 1,529 | 840 |
| East and Southeast Asia | 66.553% | 5,472,327 | 71% | 29% | 497,484 | 2,886 | 1,765 |
| Cambodia | 0.163% | 13,364 | 51% | 49% | 1,215 | 918 | 511 |
| PRC | 53.118% | 4,367,642 | 72% | 28% | 397,058 | 3,297 | 1,965 |
| Indonesia | 5.476% | 450,304 | 70% | 30% | 40,937 | 1,981 | 1,087 |
| Lao PDR | 0.138% | 11,375 | 56% | 44% | 1,034 | 1,833 | 475 |
| Malaysia | 2.287% | 188,084 | 79% | 21% | 17,099 | 6,962 | 5,151 |
| Mongolia | 0.122% | 10,069 | 37% | 63% | 915 | 3,812 | 735 |
| Myanmar | 0.264% | 21,698 | 56% | 44% | 1,973 | 438 | - |
| Philippines | 1.546% | 127,122 | 53% | 47% | 11,557 | 1,407 | 1,225 |
| Thailand | 2.103% | 172,907 | 72% | 28% | 15,719 | 2,566 | 2,640 |
| Viet Nam | 1.335% | 109,761 | 53% | 47% | 9,978 | 1,273 | 647 |
| South Asia | 28.829% | 2,370,497 | 63% | 37% | 215,500 | 1,756 | 685 |
| Bangladesh | 1.762% | 144,903 | 54% | 46% | 13,173 | 906 | 462 |
| Bhutan | 0.011% | 886 | 30% | 70% | 81 | 1,291 | 1,247 |
| India | 26.421% | 2,172,469 | 64% | 36% | 197,497 | 1,906 | 718 |
| Nepal | 0.174% | 14,330 | 50% | 50% | 1,303 | 497 | 254 |
| Sri Lanka | 0.461% | 37,908 | 52% | 48% | 3,446 | 1,881 | 1,199 |
| The Pacific | 0.073% | 6,023 | 30% | 70% | 548 | 625 | 840 |
| Fiji | 0.008% | 667 | 15% | 85% | 61 | 790 | 2,181 |
| Kiribati | 0.001% | 82 | 10% | 90% | 7 | 846 | 826 |
| PNG | 0.051% | 4,214 | 34% | 66% | 383 | 641 | 676 |
| Samoa | 0.003% | 242 | 13% | 87% | 22 | 1,351 | 1,739 |
| Solomon Is. | 0.004% | 336 | 33% | 67% | 31 | 657 | 1,136 |
| Timor-Leste | 0.001% | 71 | 35% | 65% | 6 | 65 | 329 |
| Tonga | 0.001% | 106 | 13% | 87% | 10 | 1,022 | 1,666 |
| Vanuatu | 0.004% | 306 | 40% | 60% | 28 | 1,309 | 1,339 |
| Total Asia | 100% | 8,222,503 | 68% | 32% | 747,500 | 2,335 | 1,272 |

Note: Estimates obtained using the low case scenario.

Source: Author, ADB/ADBI (2009), Centennial (2009)

The estimation results in this study are comparable with similar, country-level projections undertaken in other available studies focusing on a similar time frame, including Goldman Sachs Global Economics Papers by Lawson and Dragusanu (2008) and Poddar (2009) for the BRICS⁴ countries. A similar model was applied in these studies and the comparative results support the estimations in this paper for PRC and India, as well as the other Asian economies covered in this study. For example, the revised Poddar (2009) estimates for India's total infrastructure investment requirements for 2010-2020—after adjusting for differences in sector coverage and scope (new capacity or maintenance)—is 18% higher than the estimates provided in this study, and older estimates by Lawson and Dragusanu (2008) for PRC over a slightly different time frame (2008-2018) are only 20% lower. The estimates between this study and the Goldman Sachs studies are also comparable by sector.

The estimates of total national infrastructure needs for 2010-2020 in this paper increased slightly, by US\$230.8 billion, compared to those presented previously in ADB/ADBI (2009). Total infrastructure investment needs here include estimates for Myanmar, Afghanistan, and the Solomon Islands, which were excluded in ADB/ADBI (2009). Additionally, some country estimates were revised upward to take account of updated data and economic projections.

Table 5 shows the breakdown of investment needs by sector among the four sub-regional groupings and Figure 3 presents national investment needs by sector for the top 11 economies. Generally, energy and transportation make up the largest components of total Asia infrastructure investment needs. By sub-region, the biggest investment needs are in East and Southeast Asia at US\$5.47 trillion, or 67% of the total, and South Asia at US\$2.37 trillion, or 29% of the total. Not surprisingly, the biggest economies in Asia—PRC and India—are located in these sub-regions.

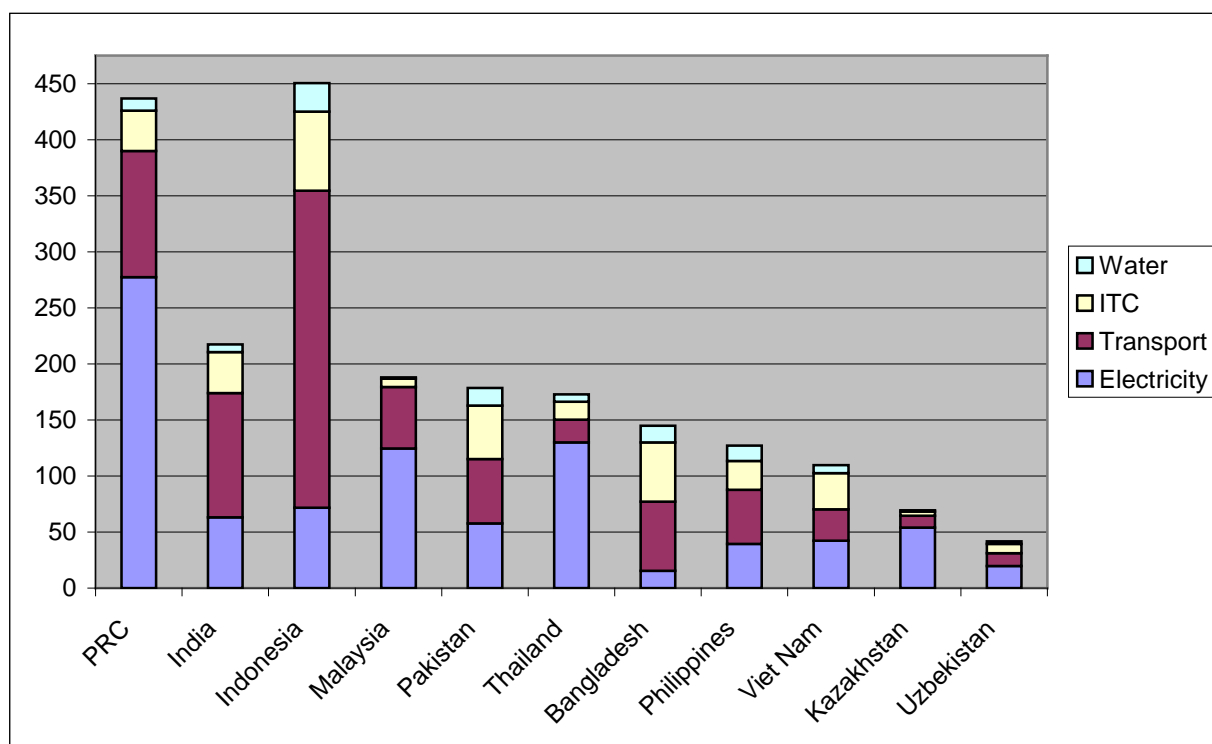
Table 5: National Infrastructure Investment Needs in Asia, 2010-2020: Per Sub-region and Per Sector (2008 US\$ billions)

| Sector / Subsector | East and Southeast Asia | South Asia | Central Asia | The Pacific | Total |
|-----------------------------|-------------------------|------------|--------------|-------------|----------|
| Electricity | 3,182.46 | 653.67 | 167.16 | - | 4,003.29 |
| Transportation | 1,593.87 | 1,196.12 | 104.48 | 4.41 | 2,898.87 |
| Airports | 57.73 | 5.07 | 1.41 | 0.10 | 64.31 |
| Ports | 215.20 | 36.08 | 5.38 | - | 256.65 |
| Rails | 16.14 | 12.78 | 6.03 | 0.00 | 34.95 |
| Roads | 1,304.80 | 1,142.20 | 91.65 | 4.31 | 2,542.97 |
| Telecommunications | 524.75 | 435.62 | 78.62 | 1.11 | 1,040.10 |
| Telephones | 142.91 | 6.46 | 4.45 | 0.05 | 153.87 |
| Mobiles | 339.05 | 415.87 | 71.97 | 0.95 | 827.84 |
| Broadband | 42.78 | 13.29 | 2.21 | 0.11 | 58.39 |
| Water and Sanitation | 171.25 | 85.09 | 23.40 | 0.51 | 280.24 |
| Water | 58.37 | 46.12 | 8.60 | 0.14 | 113.22 |
| Sanitation | 112.88 | 38.97 | 14.80 | 0.36 | 167.02 |
| Total | 5,472.33 | 2,370.50 | 373.66 | 6.02 | 8,222.50 |

Source: Author, ADB/ADBI (2009), Centennial (2009)

⁴ BRICS = Brazil, Russia, India, China, South Africa

Figure 3: National Infrastructure Investment Needs in Asia, 2010-2020: Top 11 Countries by Sector (2008 US\$ Billion – PRC and India in 10 Billion)



Source: Author, ADB/ADBI (2009), Centennial (2009)

According to the estimates of this study, Central Asia is expected to need a total of US\$374 billion in infrastructure investment over the next 10 years. Energy (electricity) infrastructure comprises 45% of the amount, followed by the transport sector which needs 28% primarily for investment in roads. Considering the geographic nature of Central Asian nations, these results are understandable. In the South Asian sub-region, the transport sector is facing the largest estimated investment requirement of US\$1.2 trillion. Considering that many of the countries are landlocked, similar to Central Asian countries, the majority of this amount is also for road infrastructure. East Asia and Southeast Asia are grouped here and include countries in ASEAN as well as GMS. In this sub-region, nearly 60% of the investment needs are in the power sector. This is followed by the transport sector, the telecommunications sector, and then the water and sanitation sector. The Pacific sub-region needs an estimated US\$6 billion in infrastructure investment, representing 3.6% of the sub-region’s cumulative projected 2010-2020 GDP. A large percentage of this need is in transport infrastructure, specifically road and airport projects.

Looking at national infrastructure investment needs in relation to projected GDP further shows how great the demand is. As can be seen in Table 6, needed investments in transport, electricity, ITC, and water amount to more than 6.5% of Asia’s estimated 2010-2020 GDP. Electricity in particular represents the largest share, at 3.2% of Asian GDP, and South Asia (excluding Afghanistan and Pakistan, which are included in central Asia) will need to invest approximately 11% of GDP in order to meet rising demands for infrastructure services.

Table 6: Infrastructure Investment Needs as a % of Estimated GDP 2010-2020

| Country | Investment as % of Estimated GDP | | | | |
|--------------------------------|----------------------------------|--------------|--------------|----------------------|---------------|
| | Transport | Electricity | ITC | Water and Sanitation | Total |
| Central Asia | 1.86% | 2.97% | 1.40% | 0.42% | 6.64% |
| Afghanistan | 6.21% | 0.00% | 4.82% | 0.89% | 11.92% |
| Armenia | 1.20% | 1.01% | 0.98% | 0.27% | 3.46% |
| Azerbaijan | 0.60% | 3.82% | 0.44% | 0.11% | 4.97% |
| Georgia | 1.20% | 1.06% | 0.69% | 0.19% | 3.14% |
| Kazakhstan | 0.58% | 2.92% | 0.20% | 0.07% | 3.77% |
| Kyrgyz Rep. | 3.94% | 6.24% | 2.44% | 0.67% | 13.29% |
| Pakistan | 2.65% | 2.68% | 2.22% | 0.73% | 8.27% |
| Tajikistan | 3.30% | 9.83% | 2.57% | 0.51% | 16.21% |
| Uzbekistan | 2.65% | 4.65% | 1.94% | 0.58% | 9.82% |
| East and Southeast Asia | 1.61% | 3.22% | 0.53% | 0.17% | 5.54% |
| Cambodia | 4.43% | 0.95% | 2.97% | 0.36% | 8.71% |
| PRC | 1.39% | 3.42% | 0.44% | 0.13% | 5.39% |
| Indonesia | 3.88% | 0.98% | 0.97% | 0.35% | 6.18% |
| Lao PDR | 10.62% | 0.00% | 2.40% | 0.60% | 13.61% |
| Malaysia | 1.94% | 4.42% | 0.27% | 0.04% | 6.68% |
| Mongolia | 12.04% | 0.00% | 1.21% | 0.21% | 13.45% |
| Myanmar | 2.70% | 0.00% | 1.46% | 1.88% | 6.04% |
| Philippines | 2.30% | 1.87% | 1.22% | 0.65% | 6.04% |
| Thailand | 0.58% | 3.69% | 0.45% | 0.19% | 4.91% |
| Viet Nam | 2.07% | 3.12% | 2.38% | 0.54% | 8.12% |
| South Asia | 5.55% | 3.03% | 2.02% | 0.39% | 11.00% |
| Bangladesh | 4.92% | 1.24% | 4.22% | 1.19% | 11.56% |
| Bhutan | 2.84% | 0.00% | 0.87% | 0.36% | 4.07% |
| India | 5.67% | 3.23% | 1.87% | 0.34% | 11.12% |
| Nepal | 1.65% | 0.58% | 5.14% | 1.10% | 8.48% |
| Sri Lanka | 4.23% | 1.00% | 1.39% | 0.22% | 6.85% |
| The Pacific | 2.60% | 0.00% | 0.65% | 0.30% | 3.55% |
| Fiji | 1.01% | 0.00% | 0.53% | 0.14% | 1.68% |
| Kiribati | 5.17% | 0.00% | 0.16% | 0.32% | 5.65% |
| PNG | 3.30% | 0.00% | 0.73% | 0.32% | 4.35% |
| Samoa | 3.33% | 0.00% | 1.12% | 0.26% | 4.70% |
| Solomon Is. | 3.50% | 0.00% | 0.28% | 0.35% | 4.13% |
| Timor-Leste | 0.00% | 0.00% | 0.07% | 0.79% | 0.86% |
| Tonga | 2.29% | 0.00% | 1.13% | 0.29% | 3.71% |
| Vanuatu | 2.92% | 0.00% | 0.92% | 0.28% | 4.13% |
| Total Asia | 2.30% | 3.17% | 0.82% | 0.22% | 6.52% |

Note: Estimates obtained using the low case scenario.

Source: Author, Centennial (2009)

5. INFRASTRUCTURE NEEDS FOR REGIONAL PROJECTS FOR ASIAN CONNECTIVITY: 2010-2020

The total investments required to meet demand for the identified 1202 regional projects is valued at approximately US\$320 billion, with an average infrastructure investment need of about US\$29 billion per year for the period 2010-2020 (Table 7). Of this total, needed investment in energy projects accounts for about 30% and transport 70%. This information is based on a consolidated list of various proposals that are considered both economically viable and likely to be implemented between 2010 and 2020⁵. The state of projects included varies greatly and some are much more advanced in their development than others. The data is compiled from a variety of sources—some much more detailed than others—and includes proposals at various levels of definition, preparation, review, and vetting. Also, some of the project information was acquired through anecdotal references where access to detailed feasibility reports and economic and financial evaluations for the projects was limited. The estimates of regional infrastructure investment needs in this paper, as shown in Table 7, include revised projections of some projects and 125 additional projects, which resulted in an increase of US\$34.0 billion compared with estimates provided previously in ADB/ADBI (2009).

Table 7: Asia's Total Regional Indicative Investment Needs for Identified and Pipeline Infrastructure Projects by Regional/Sub-regional Program: 2010-2020 (US\$ Million)

| Regional / Sub-regional Program | Energy | Transport | | | | | Grand Total |
|---------------------------------|-----------------|-----------------|------------------|-----------------|-----------------|------------------|------------------|
| | | Airport / Port | Rail | Road | TF / Logistics | Total | |
| AH | - | - | - | 17,425.0 | - | 17,425.0 | 17,425.0 |
| TAR | - | - | 107,469.0 | - | - | 107,469.0 | 107,469.0 |
| ACP* | - | 51,446.0 | - | - | - | 51,446.0 | 51,446.0 |
| CAREC | 15,667.0 | 1,347.7 | 5,131.3 | 12,932.9 | 9,925.1 | 29,337.0 | 45,004.0 |
| GMS | 2,603.8 | 200.0 | 1,523.0 | 3,972.0 | 163.0 | 5,858.0 | 8,461.8 |
| ASEAN | 11,583.0 | - | 16,800.0 | - | - | 16,800.0 | 28,383.0 |
| BIMP-EAGA | 100.0 | - | - | - | - | - | 100.0 |
| SASEC | 133.0 | - | - | - | 203.0 | 203.0 | 336.0 |
| Other** | 61,928.6 | - | - | - | 89.5 | 89.5 | 62,018.1 |
| Total | 92,015.4 | 52,993.7 | 130,923.3 | 34,329.9 | 10,380.6 | 228,627.4 | 320,642.8 |

* ACP = Asian Container Ports

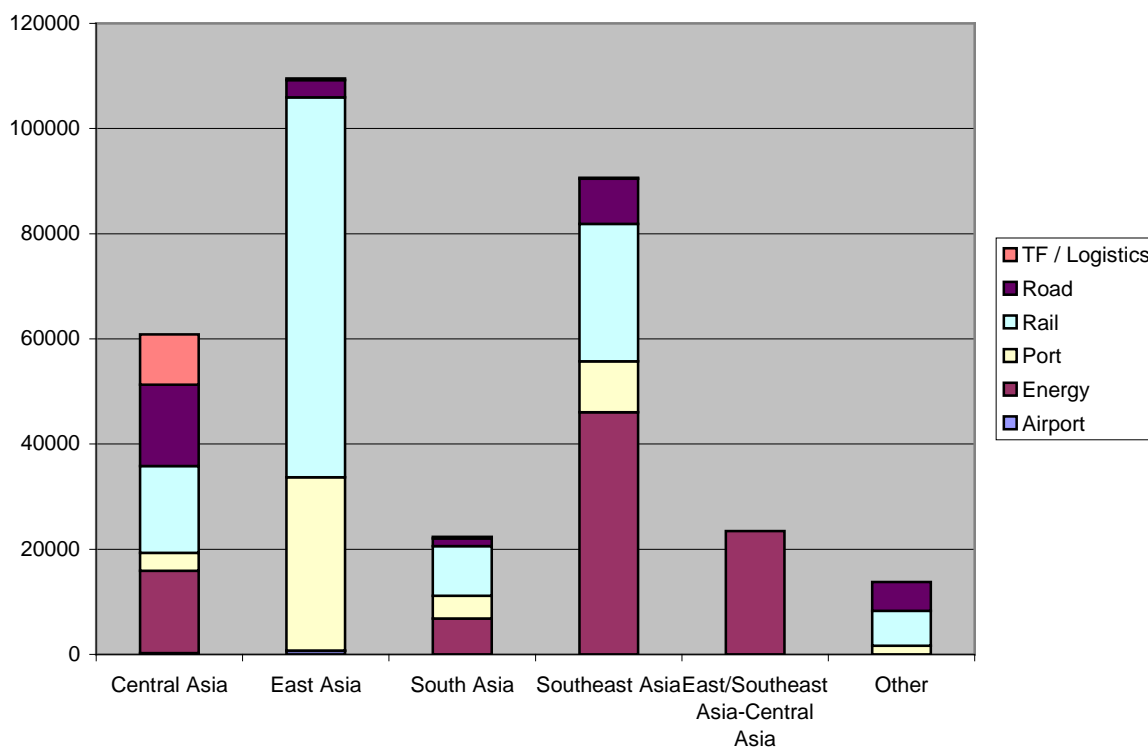
** Includes projects connecting East/Southeast – Central – South Asia that do not explicitly fall under a sub-regional program.

Source: Author

The investment needs for regional projects are around 4% of total national infrastructure investment needs, which is comparable to Europe (see Van der Geest and Nunez-Ferrer 2010). Figure 4 presents the composite of the 1202 bilateral, sub-regional, and pan-Asian infrastructure projects that are planned and soon to be constructed, and that were included in this study.

⁵ The complete compendium of projects is provided as Appendix 2 of this paper.

Figure 4: Total Regional Investment Needs for Identified and Pipeline Infrastructure Projects by Region: 2010-2020 (US\$ Million)



Source: Author

It is also evident from Figure 4 that the vast majority of financing demand for regional infrastructure investment falls within East and Southeast Asia—though Central Asia has this highest overall number of projects at 199. The investment needed for Asian transport sector projects amounted to US\$218 billion, more than 2.5 times the investment needed for energy projects. This contrasts with the pattern of national investment demand, where energy demand is 1.3 times the investment need for the transport sector. This may be due to the very complex nature of cross-border energy projects together with high investment requirements, the need for strong coordination and cooperation among participating countries, and the difficulties of harmonizing energy regulation among participating countries. Asian energy sectors are typically highly regulated.

The following subsections detail the investment requirements for regional projects in Asia at the pan-Asian and sub-regional levels.

5.1 Pan-Asian Transport Network

The pan-Asia transport network consists of highways, rails, airports, and container ports linking Asian countries as well as Asia to Eastern Europe and the Middle East. It includes the Asian Highways (AH), the Trans-Asian Railway (TAR), and Asian Container Ports (ACP) networks, and is estimated to need around US\$176.3 billion in investment over the coming decade. The AH network is a system of 141,000 km of standardized roadways crisscrossing 32 Asian countries with linkages to Europe. The 121 identified transport projects are expected to cost around US\$17.4 billion. The TAR network is comprised of almost 81,000 km of rail lines serving 28 countries, starting at the Pacific seaboard of Asia and ending in Europe. There were 85 projects identified within TAR, whose needs were estimated at about US\$107.5 billion. A large share of investment needed for TAR falls in the East Asian region, at US\$70.6 billion. These projects were chosen for their potential to facilitate international

trade between Asia (UNESCAP 2007). Additionally, a range of 765 container ports projects around Asia were identified and expected to cost a total of around US\$51.4 billion.

5.2 Infrastructure Projects at the Sub-regional Level

More than 60% of Asia's total energy investment needs are in the Southeast and Central Asia sub-regions. TAPI, the largest among these energy projects, will transport natural gas from the Dauletabad gas field in Turkmenistan through Afghanistan, Pakistan, and then to India. It is expected to carry 27 billion cubic meters (bcm) of natural gas annually. There are also 5 major power projects identified in Central and South Asia, some of which have links in Asia and Europe.

In Southeast Asia, 119 projects estimated to be about US\$61.6 billion belong to sub-regional groupings like GMS, ASEAN, and BIMP-EAGA. More than 60% of regional transport investment needs are in Viet Nam, followed by around 29% in the provinces of PRC. In the regional energy projects in the GMS, around 50% of the needed investments are in Lao PDR. Generally in the GMS sub-region, greater amounts of investment are needed in the transport sector. This could imply that in order to harness, share, and utilize the available resources found in each country, connectivity through transportation is very important.

The second largest investment project needed is identified by the CAREC. Central Asia is an historical land bridge that connects the East and West (East Asia and Europe) and the North and South (the Indian Ocean and the Persian Gulf to Russia and the Baltic). More than 40% of the planned cross-border infrastructure in the CAREC region is for transportation (mostly intra-regional road construction and upgrades), while the remaining majority is for cross-border energy. The identified energy projects comprise of oil pipelines, electricity transmission and distribution lines, and construction of hydropower plants, as well as the rehabilitation of existing lines and electricity power loss control infrastructure. Many of the identified projects involve Kazakhstan or Tajikistan or both.

Some of the indicative investment needs in South Asia are found under the SASEC program. Many of the projects in South Asia, aside from energy, are related to logistics and trade facilitation. This could emphasize the role of transport and communication infrastructure in the trade openness of countries in this sub-region. On the other hand, in the energy sector, around 80% of the investment needs are for renewable energy projects, including hydroelectric power projects in Nepal and Bhutan.

There are many projects in South Asia, Central Asia, and Southeast Asia (including ASEAN nations and East Asia), which have not been planned under pan-Asian and sub-regional, intergovernmental programs⁶. Though these projects may not have explicitly been planned or programmed under designated sub-regional or regional cooperation programs, they have been labeled under such programs in this study according to which countries are involved or participating jointly on a given project. For example, some energy projects, such as the Trans-Afghanistan Gas Pipeline (TAPI) and the Central Asia-China Natural Gas Pipeline do not belong to any specific sub-regional program as they cut across South Asia and Central Asia. Sections of these projects are included in their corresponding sub-regional programs based on the countries involved.

In this section, proposed projects (based on academic studies) in the Greater Tumen Initiative (GTI) are not included in the estimated total regional infrastructure needs. GTI projects were not included primarily because there has yet to be any form of formal government level agreement or commitment to these projects. However, with 47 proposed projects estimated at nearly US\$19 billion and involving trade and transport corridors spanning the Northeast Asia sub-region—from Eastern Russia to Korea and also including

⁶ See Appendix 1 for descriptions of the sub-regional programs included in this study.

Mongolia, PRC, and Korea—these projects could also be included in future when considering regional or pan-Asian infrastructure and connectivity (Kayahara 2003).

5.3 Investment Needs for High Priority Projects

The earlier section highlights more than 1202 regional projects with cost estimates. Based on ADB/ADBI (2009), Table 8 presents a list of high priority regional transport and energy projects costing an estimated \$15 billion under three sub-regional programs in Southeast Asia, Central Asia and South Asia. Projects were determined to fall in the “high priority” category if they were well defined, had progressed through necessary approval processes, and considered politically, technically, economically, and financially feasible. In GMS, there were 10 projects identified. Out of the five projects in the transport sector, four of these are road infrastructure. While in the energy sector, out of the five projects, three of these are transmission lines and two are hydropower projects. In the CAREC program, there were six projects identified mostly in the transport sector, estimated to be about US\$10 billion, or 65% of the total estimated cost of the twenty one priority projects. This figure is the largest among the sub-regions. In SASEC, the major projects include primarily transport and logistics, communication, tourism, and hydroelectric power projects.

The successful implementation of these priority projects could realize large benefits for participating countries and persuade more Asian economies to participate in regional projects with “win-win” benefits.

Table 8: Twenty One High Priority “Flagship” Regional Projects

| Sub-region | Transport | Cost (in US \$ million) | Energy | Cost (in US \$ million) | Total No. of Projects | Total Cost (in US\$ million) |
|--------------|--|-------------------------|---|-------------------------|-----------------------|------------------------------|
| GMS | 5 projects | 3,324 | 5 projects | 1,414 | 10 | 4,738 |
| | GMS Kunming-Hai Phong Transport Corridor-Noi Bai-Lao Cao Highway | 1,21 | GMS Northern Power Transmission | 54 | | |
| | 2nd GMS Northern Transport Network Improvement | 135 | GMS Nabong-Udon Thani Power Transmission and Interconnection | 110 | | |
| | Rehabilitation of the Railway in Cambodia | 73 | Lao PDR-Viet Nam Power Interconnection (Ban Sok-Pleiku) | 270 | | |
| | Ha Long-Mong Cai Expressway | 1,000 | GMS Nam Ngiep 1 Hydropower Projec | 380 | | |
| | GMS Hanoi-Lang Son Expressway | 900 | GMS Nam Ngum 3 Hydropower Projec | 600 | | |
| CAREC | 4 projects (total) | 9,043 | 2 projects (total) | 1,072 | 6 | 10,115 |
| | CAREC Corridor 1b | 6,700 | Central Asia-South Asia Regional Electricity Market (CASAREM) | 962 | | |
| | Caucasus Corridor:Armenia-Georgia Regional Transport | 323 | Regional Power Transmission Interconnection Project | 110 | | |
| | CAREC Corridor 2 | 1,800 | | | | |
| | Western Regional Road Corridor Development Project-Mongolia | 220 | | | | |
| SASEC | 3 projects (total) | 293 | 2 projects (total) | 279 | 5 | 572 |

| | | | | | | |
|--------------|--|---------------|---|--------------|-----------|---------------|
| | SASEC Information Highway Project (Bangladesh, Bhutan, India, and Nepal) | 24 | Green Power Development (Bhutan) | 234 | | |
| | Sub-regional Transport Logistics and Trade Facilitation Projects (Bangladesh, Bhutan, India, and Nepal) | 179 | West Seti Hydroelectric Project (Nepal) | 45 | | |
| | Improving Connectivity and Destination Infrastructure for Sub-regional Tourism Development (Bangladesh, Bhutan, India, Nepal, and Sri Lanka) | 90 | | | | |
| Total | 12 projects | 12,660 | 9 projects (total) | 2,764 | 21 | 15,424 |

Source: Author's Compilation and ADB/ADBI (2009)

6. CHALLENGES FOR REGIONAL INFRASTRUCTURE FINANCING

Meeting huge financing needs of US\$776 billion per year for national (US\$747 billion) and regional (US\$29 billion) infrastructure during 2010-2020 is one of the largest challenges facing many developing countries in Asia. Asia is expansive and its economies diverse. Continuing to promote competitiveness and productivity by reducing trade and logistics costs, forming specialized industrial clusters, and enlarging and deepening production networks all need high quality national and regional infrastructure to succeed.

Using the most conservative estimate, the investment requirement for infrastructure at the national level is a staggering US\$8.3 trillion over the next decade. In order to attract finance, particularly from the private sector, there is a need, to translate this demand into “bankable”, commercially viable and profitable projects. Individual countries need to mobilize domestic resources for infrastructure development. However, low-income countries may be more dependent on regional and international capital markets and donors (including bilateral and multilateral development banks) for additional financing, particularly concessional financing.

Based on the “bottom-up” approach, the financing demand for the planned regional infrastructure projects that are economically viable is about US\$313 billion over period 2010-2020 for 1202 projects. Despite the limitations in available data and of the methodology, this paper provides a good illustration of infrastructure demand in Asia over the next eleven years. However, it is important to note that it is not possible to predict the exact duration and implementation of the planned projects that are in pipeline. The cost estimates are mostly based on the results of the feasibility studies of planned projects. Though the methodologies in estimating the national and regional investment needs are not fully comparable and may inherently overlap, it is interesting to note that regional investment needs are only 3.9% of national estimated needs.

The major challenge for Asia is to mobilize various available resources to finance “bankable” infrastructure projects and ensuring strong coordination and cooperation among various stakeholders at the national, sub-regional and regional level. This calls for an appropriate comprehensive approach to infrastructure development to facilitate regional infrastructure connectivity. This approach should address the need for the identification and preparation of priority bankable projects pipeline through a project development mechanism or framework

under a Pan-Asia Infrastructure Forum (see ADB/ADBI, 2009 and Bhattacharyay, 2010 for more details). It also requires development of innovative financing mechanism and modalities, as well as policy, regulation and capacity development (through human capital and institutional development) for participating countries. The capacity development for less developed countries is very important as the regional infrastructure performance is only as good as its weakest link or weakest participating country. Another chapter of the book addresses the issues and challenges and the role of Asian financial market integration in financing the infrastructure needs.

An interesting aspect of Asian economic diversity, and its particular potential for regional energy and water infrastructure, is that it consists of both resource surplus and deficient countries. For example, Nepal, Bhutan, Myanmar and Lao PDR represent energy surplus countries that could supply clean hydropower or natural gas to energy deficient countries in the region, like Bangladesh, India, Pakistan, Thailand, and Viet Nam. Additionally, Central Asian countries could supply gas and oil through pipelines to India, Pakistan, and PRC to feed growing demands there. There is an urgent need for regional cooperation in planning and implementing environment-friendly regional infrastructure projects to share these scarce resources for achieving energy and water security. In the face of the global financial crisis and resulting economic downturn, there is an increasing need for greater coordination of stimulus packages' in infrastructure investment in transport, energy, water, and ITC to ensure cross-border projects are efficiently developed for enhancing regional connectivity. Regional infrastructure projects for building an integrated Asia are essential to harness shared resources and efficiency in a cost-effective manner.

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APPENDIX

Appendix 1: Regional and Sub-regional Groupings and Infrastructure Cooperation Programs

| Regional / Sub-regional Program | Note |
|-------------------------------------|--|
| I Asian Highways (AH) | Afghanistan, Armenia, Azerbaijan, Bangladesh, Bhutan, Cambodia, PRC, Georgia, India, Indonesia, Iran, Kazakhstan, Democratic People's Republic of Korea, Republic of Korea, Kyrgyz Republic, Lao PDR, Japan, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Russian Federation, Singapore, Sri Lanka, Tajikistan, Thailand, Turkey, Turkmenistan, Uzbekistan, and Viet Nam - The Intergovernmental Agreement on the Asian Highway Network was adopted on 18 November 2003 by an intergovernmental meeting held in Bangkok, was open for signature in April 2004 in Shanghai and entered into force on 4 July 2005. |
| II Trans-Asian Railway (TAR) | Azerbaijan, Bangladesh, Belarus, Cambodia, Democratic People's Republic of Korea, Georgia, India, Indonesia, Kazakhstan, Kyrgyz Republic, Lao PDR, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, PRC, Poland, Republic of Korea, Russian Federation, Tajikistan, Thailand, Turkey, Turkmenistan, Singapore, Sri Lanka, Uzbekistan, and Viet Nam - The Intergovernmental Agreement on the Trans-Asian Railway Network enters into force on 11 June 2009. |
| III ASEAN | The Association of Southeast Asian Nations or ASEAN was established on 8 August 1967 in Bangkok by the five original Member Countries, namely, Indonesia, Malaysia, Philippines, Singapore, and Thailand. Brunei Darussalam joined on 8 January 1984, Viet Nam on 28 July 1995, Lao PDR and Myanmar on 23 July 1997, and Cambodia on 30 April 1999. |
| 1 Brunei | |
| 2 Cambodia | |
| 3 Indonesia | |
| 4 Lao PDR | |
| 5 Malaysia | |
| 6 Myanmar | |
| 7 Philippines | |
| 8 Singapore | |
| 9 Thailand | |
| 10 Viet Nam | |

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|-------------|-------------------|--|
| IV | BIMP-EAGA | A sub-regional growth area named the Brunei Darussalam-Indonesia-Malaysia-Philippines East ASEAN Growth Area or BIMP-EAGA. BIMP-EAGA was formally launched on March 24, 1994 and aims to increase trade, investments and tourism in the sub-region. |
| 1 | Brunei Darussalam | |
| 2 | Indonesia | |
| 3 | Malaysia | |
| 4 | Philippines | |
| V | BIMSTEC | Initially formed in Bangkok, Thailand, on 6 June 1997 with its name BIST-EC (Bangladesh, India, Sri Lanka, and Thailand Economic Cooperation). Myanmar later joined the organization at a special ministerial meeting held in Bangkok on 22 December 1997. Consequently, the name of the organization was changed to BIMST-EC. |
| 1 | Bangladesh | |
| 2 | Bhutan | |
| 3 | India | |
| 4 | Myanmar | |
| 5 | Nepal | |
| 6 | Sri Lanka | |
| 7 | Thailand | |
| VI | CAREC | The Central Asia Regional Economic Cooperation – CAREC – Program was initiated in 1997. |
| 1 | Afghanistan | |
| 2 | Azerbaijan | |
| 3 | PRC | |
| 4 | Mongolia | |
| 5 | Kazakhstan | |
| 6 | Kyrgyz Republic | |
| 7 | Tajikistan | |
| 8 | Uzbekistan | |
| VII | GMS | In 1992, with ADB's assistance, Greater Mekong Sub-region (GMS) consisting of six countries entered is a program of sub-regional economic cooperation, designed to enhance economic relations among the countries. |
| 1 | Cambodia | |
| 2 | PRC (Yunnan) | |
| 3 | Lao PDR | |
| 4 | Myanmar | |
| 5 | Thailand | |
| 6 | Viet Nam | |
| VIII | SASEC | The South Asia Sub-regional Economic Cooperation – SASEC – Program is helping transform challenges into opportunities in one of the world's poorest, most densely populated areas. |
| 1 | Bangladesh | |
| 2 | Bhutan | |

- 3 India (Eastern States)
- 4 Nepal

Appendix 2: Compendium of Investment Needs of Regional Infrastructure

Projects by Sub-region and by Program

Total Number of Projects: 1202 (437 listed here + 756 unlisted ACP projects)

| Region(s) Connected | Regional / Sub regional Program | Primary Country | Sector | Project | Investment Need (US\$ Million) |
|---------------------|---------------------------------|-----------------|---------|---|--------------------------------|
| Central Asia | CAREC | Afghanistan | Airport | Rehabilitation of Regional Airports, Phase I | 32.1 |
| Central Asia | CAREC | Afghanistan | Energy | Transmission and distribution rehabilitation in power sector | 1,500.0 |
| Central Asia | CAREC | Afghanistan | Rail | Rail Feasibility Study (Hairatan-Mazare-e-Sharif-Herat and Shirkhan Bandar-Kunduz-Naibabad) | 1.0 |
| Central Asia | CAREC | Afghanistan | Rail | Rail Feasibility Study (Hairatan-Naibabad-Kabul-Torkham) | 0.6 |
| Central Asia | CAREC | Afghanistan | Rail | Rail Feasibility Study (Shntikh-Herat) | 0.6 |
| Central Asia | CAREC | Afghanistan | Road | Bala Murghab-Leman Road | 180.0 |
| Central Asia | AH | Afghanistan | Road | Balkh-Andkhoy | 36.0 |
| Central Asia | AH | Afghanistan | Road | Bridge over Ammou River | 40.0 |
| Central Asia | AH | Afghanistan | Road | Herat-Andkhoy | 80.0 |
| Central Asia | AH | Afghanistan | Road | Kabul-Bamiyan | 40.0 |
| Central Asia | CAREC | Afghanistan | Road | Kabul-Jalalabad Road Feasibility Study | 0.8 |
| Central Asia | AH | Afghanistan | Road | Kabul-Surubi | 30.0 |
| Central Asia | AH | Afghanistan | Road | Kandahar-Gereshk | 76.0 |
| Central Asia | CAREC | Afghanistan | Road | Leman-Armalick Road | 30.0 |
| Central Asia | CAREC | Afghanistan | Road | Naibabad-Hairatan Road | 10.0 |
| Central Asia | AH | Afghanistan | Road | Polekhumri-Hayratan | 29.0 |
| Central Asia | CAREC | Afghanistan | Road | Preparing the Road Network III | 1.0 |
| Central Asia | CAREC | Afghanistan | Road | Pul-e-Khumri-Doshi Road | 10.0 |
| Central Asia | CAREC | Afghanistan | Road | Qaisar-Bala Murghab Road | 55.0 |

| | | | | | |
|--------------|-------|--------------------|----------------|--|---------|
| Central Asia | CAREC | Afghanistan | Road | Salang Tunnel Expansion Feasibility Study | 2.0 |
| Central Asia | CAREC | Afghanistan | TF / Logistics | Transport Sector Planning (All Modes) | 1.0 |
| Central Asia | TAR | Afghanistan / Iran | Rail | Sangan-Heart | 127.0 |
| Central Asia | CAREC | Azerbaijan | Energy | Rehab of the T&D system in the gas sector as well as gas flaring reduction | 629.0 |
| Central Asia | CAREC | Azerbaijan | Energy | Transmission lines and SS to improve capacity of Azeri-Russia-Georgia-Iran interconnection | 132.0 |
| Central Asia | CAREC | Azerbaijan | Port | Acquisition of High Capacity Ferries and Ro/Ros | 69.0 |
| Central Asia | CAREC | Azerbaijan | Port | Feasibility Study for New Alyat Port | 1.0 |
| Central Asia | TAR | Azerbaijan | Rail | Qazvin-Rasht-Anzali-Astara | 12.4 |
| Central Asia | CAREC | Azerbaijan | Rail | Railway Trade and Transport Facilitation | 1,750.0 |
| Central Asia | TAR | Azerbaijan | Rail | Server-Yug (North-South) International Transport Corridor | 24.5 |
| Central Asia | TAR | Azerbaijan | Rail | Traseka International Transport Corridor | 699.4 |
| Central Asia | CAREC | Azerbaijan | Road | East-West Highway Improvement | 1,250.0 |
| Central Asia | AH | Azerbaijan | Road | Goradiz-Gazi Mammed | 74.0 |
| Central Asia | AH | Azerbaijan | Road | Kazakh- Border of Georgia | 20.0 |
| Central Asia | AH | Azerbaijan | Road | Nakhchivan-Sadarak- Border of Turkey | 46.0 |
| Central Asia | AH | Azerbaijan | Road | Ring Road connecting AH5 and AH8 around Baku | 20.0 |
| Central Asia | CAREC | Azerbaijan | Road | Road Maintenance | 0.8 |
| Central Asia | CAREC | Kazakhstan | Airport | Expansion of Shymkent, Semey and Kokchetau Airports | 163.0 |
| Central Asia | CAREC | Kazakhstan | Energy | Caspian Littoral Gas Pipeline | 700.0 |
| Central Asia | CAREC | Kazakhstan | Energy | Eskene-Kuryk oil pipeline, Kuryk terminal, and oil tankers | 1,100.0 |
| Central Asia | CAREC | Kazakhstan | Energy | Kenkiyak-Kumkol oil pipeline | 493.0 |
| Central Asia | CAREC | Kazakhstan | Energy | Moinak hydropower | 160.0 |
| Central Asia | CAREC | Kazakhstan | Energy | Novorossiysk and Atyrau-Samara oil pipeline capacity expansion | 1,287.0 |
| Central Asia | CAREC | Kazakhstan | Energy | Second North-South transmission line | 147.0 |
| Central Asia | CAREC | Kazakhstan | Port | Expansion of Aktau Port | 347.5 |
| Central Asia | CAREC | Kazakhstan | Rail | Construction of Korgas-Zhetygen Rail Line | 742.0 |
| Central Asia | TAR | Kazakhstan | Rail | Electrification of Aktogai-Mointi Railway Section | 258.0 |
| Central Asia | TAR | Kazakhstan | Rail | Electrification of Almaty-Akogai Railway Section | 250.0 |
| Central Asia | TAR | Kazakhstan | Rail | Electrification of Doystek-Aktogai Railway Section | 141.0 |

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|--------------|-------|-----------------|----------------|--|---------|
| Central Asia | TAR | Kazakhstan | Rail | Electrification of Kandiagash-Makat | 298.0 |
| Central Asia | TAR | Kazakhstan | Rail | Epaliev-Kypik | 62.0 |
| Central Asia | TAR | Kazakhstan | Rail | Jezkazgan-Beiney | 2,300.0 |
| Central Asia | TAR | Kazakhstan | Rail | Korgas-Jetigen | 775.0 |
| Central Asia | TAR | Kazakhstan | Rail | Mangishlak-Baytino | 190.0 |
| Central Asia | TAR | Kazakhstan | Rail | Yzen-border of Turkmenistan | 250.0 |
| Central Asia | CAREC | Kazakhstan | Road | Aktau-Beyneu Road Rehabilitation | 550.0 |
| Central Asia | CAREC | Kazakhstan | Road | Almaty-Kapchagay Road Rehabilitation | 580.0 |
| Central Asia | CAREC | Kazakhstan | Road | Astana-Karaganda Road Rehabilitation | 1,000.0 |
| Central Asia | AH | Kazakhstan | Road | Border of Russian Federation (to Samara)-Pogodaeva-Shymkent-Almaty-Khorgos | 347.0 |
| Central Asia | AH | Kazakhstan | Road | Kaerak-Kostanai-Astana-Almaty-Khorgos | 230.0 |
| Central Asia | AH | Kazakhstan | Road | Kamenka-Ural'sk-Karabutak-Aralsk-Kyzylorda-Shymkent | 628.0 |
| Central Asia | AH | Kazakhstan | Road | Kotyaevka-Atyrau-Aktau-Border of Turkmenistan | 374.0 |
| Central Asia | CAREC | Kazakhstan | TF / Logistics | Coordinator for CAREC | 0.1 |
| Central Asia | CAREC | Kazakhstan | TF / Logistics | Rehabilitation of Western Europe-Western PRC Transit Corridor | 6,561.0 |
| Central Asia | CAREC | Kazakhstan | TF / Logistics | Transport Sector Services Study | 0.1 |
| Central Asia | CAREC | Kyrgyz Republic | Airport | Kyrgyz Air Traffic Control Capacity Enhancement | 4.5 |
| Central Asia | CAREC | Kyrgyz Republic | Airport | Rehabilitation of Osh Airport | 40.0 |
| Central Asia | CAREC | Kyrgyz Republic | Energy | Kambarata I hydropower | 1,940.0 |
| Central Asia | CAREC | Kyrgyz Republic | Energy | Kambarata II hydropower | 240.0 |
| Central Asia | CAREC | Kyrgyz Republic | Energy | Kemin-Datka-Khodjent transmission line | 380.0 |
| Central Asia | CAREC | Kyrgyz Republic | Energy | Transmission and distribution rehabilitation in natural gas sector | 40.0 |
| Central Asia | CAREC | Kyrgyz Republic | Energy | Transmission and distribution rehabilitation in power sector | 200.0 |

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|--------------|-------|-----------------|------|--|---------|
| Central Asia | TAR | Kyrgyz Republic | Rail | Balkchy-Kochor-Kara-Keche | 136.4 |
| Central Asia | TAR | Kyrgyz Republic | Rail | Balykchi - Arpa | 2,000.0 |
| Central Asia | TAR | Kyrgyz Republic | Rail | China-Krygyzstan-Uzbekistan | 1,400.0 |
| Central Asia | CAREC | Kyrgyz Republic | Rail | Electrification of Bishkek-Balykchy Railway | 100.0 |
| Central Asia | CAREC | Kyrgyz Republic | Rail | Equipment Purchase for Wagon Repair/Maintenance Facility | 4.0 |
| Central Asia | TAR | Kyrgyz Republic | Rail | Kara-Keche-Arpa | 570.0 |
| Central Asia | TAR | Kyrgyz Republic | Rail | Kashi-Torugart-Arpa-Uzgen | 2,100.0 |
| Central Asia | TAR | Kyrgyz Republic | Rail | Lugovaya-Balykchy railway | 65.0 |
| Central Asia | TAR | Kyrgyz Republic | Rail | Procurement of equipment for van repair ships | 4.0 |
| Central Asia | CAREC | Kyrgyz Republic | Rail | Track Rehabilitation Project (Chaldovar-Balykchy) | 65.0 |
| Central Asia | TAR | Kyrgyz Republic | Rail | Use of electric-traction on Lugovaya-Bishkek railway | 100.0 |
| Central Asia | AH | Kyrgyz Republic | Road | Bishkek-Naryn-Torougart | 173.0 |
| Central Asia | CAREC | Kyrgyz Republic | Road | Bishkek-Torugart Road Rehabilitation | 300.0 |
| Central Asia | CAREC | Kyrgyz Republic | Road | CAREC Regional Road Corridor Improvement (Sary Tash-Karamik) | 39.5 |
| Central Asia | AH | Kyrgyz Republic | Road | Osh-Isfana | 133.0 |
| Central Asia | CAREC | Kyrgyz Republic | Road | Reconstruction of Taraz-Talas-Suusamyр Road | 31.8 |
| Central Asia | AH | Kyrgyz Republic | Road | Road around Lake Issyk-Kul and connection to AH Balykchy-Cholpon-Ata-Karakol-Bokonbaevo-Balykchy | 131.0 |

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|--------------|-------|-----------------|---------|--|---------|
| Central Asia | CAREC | Kyrgyz Republic | Road | Southern Transport Road Rehabilitation (Osh-Sary Tash-Irkeshtan) | 170.0 |
| Central Asia | AH | Kyrgyz Republic | Road | Taraz-Talas-Susamyr | 60.0 |
| Central Asia | TAR | Pakistan | Rail | Dalbandin-Gwadar | 933.0 |
| Central Asia | AH | Pakistan | Road | Dualization of Hassanabdal-Abbottabad-Mansehra | 51.0 |
| Central Asia | AH | Pakistan | Road | Gwadar-Turbat-Hoshab-Awaran-Khuzdar section | 271.0 |
| Central Asia | AH | Pakistan | Road | Hub-Uthal | 27.0 |
| Central Asia | AH | Pakistan | Road | Hyderabad-Mirpurkhas-Umarkot-Khokhropar | 50.0 |
| Central Asia | AH | Pakistan | Road | Improvement of Dalbandin-Naushki section | 34.0 |
| Central Asia | AH | Pakistan | Road | Improvement of Kuchlac-Zhob | 60.0 |
| Central Asia | AH | Pakistan | Road | Improvement of Sibi-Sariab | 68.0 |
| Central Asia | AH | Pakistan | Road | Lakpass Tunnel | 9.0 |
| Central Asia | AH | Pakistan | Road | National Highway N-70 (Multan-Muzafargarh; Muzaffargarh Bypass; Muzafargarh & Bewatta) | 103.0 |
| Central Asia | AH | Pakistan | Road | Sehwan-Dadu-Ratodero | 103.0 |
| Central Asia | CAREC | Regional | Airport | Emergency Compliance with ICAO Requirements | 6.0 |
| Central Asia | CAREC | Regional | Airport | Needs Assessment of Central Asian Civil Aviation | 3.0 |
| Central Asia | CAREC | Regional | Airport | Training of CAREC Experts in Aviation Safety to ICAO Standards | 2.0 |
| Central Asia | CAREC | Regional | Energy | Central Asia-South Asia Regional Electricity Market (CASAREM) | 962.0 |
| Central Asia | CAREC | Regional | Energy | Regional Power Transmission Interconnection Project | 109.5 |
| Central Asia | ACP | Regional | Port | NA | 3022 |
| Central Asia | CAREC | Regional | Port | Needs Assessment of Caspian Shipping Along CAREC Corridors | 1.0 |
| Central Asia | CAREC | Regional | Rail | Supporting Management of Cross Border Railway Operations | 1.5 |
| Central Asia | CAREC | Regional | Road | CAREC Transport Corridor 1b | 6,700.0 |
| Central Asia | CAREC | Regional | Road | Collaborative Regional Operations and Maintenance of Corridors | 0.8 |
| Central Asia | CAREC | Regional | Road | Common CAREC Approach to Road Vehicle Emission Standards | 0.8 |
| Central Asia | CAREC | Regional | Road | Developing Inter-country Bus Services | 0.5 |

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|--------------|-------|----------|-------------------|---|---------|
| Central Asia | CAREC | Regional | Road | Equitable Road Maintenance User Charges and Cross Border Fees | 1.0 |
| Central Asia | CAREC | Regional | Road | Establishment of Third-Party Motor Vehicle Liability Insurance Regime | 0.3 |
| Central Asia | CAREC | Regional | Road | Financing Renewal of Vehicle Fleets and Equipment | 0.5 |
| Central Asia | CAREC | Regional | Road | International Road Transport Conventions and CAREC Agreements | 1.0 |
| Central Asia | CAREC | Regional | Road | Regional Road Corridor Safety Auditing | 0.8 |
| Central Asia | CAREC | Regional | TF / Logistics | Assistance in Implementation of WCO Recommendations for Customs | 3.0 |
| Central Asia | CAREC | Regional | TF / Logistics | Border Crossing Point Infrastructure and Investment | 500.0 |
| Central Asia | CAREC | Regional | TF / Logistics | Border Post Improvements and Joint Border Processing | 200.0 |
| Central Asia | CAREC | Regional | TF / Logistics | CAREC Trade Portal | 0.6 |
| Central Asia | CAREC | Regional | TF / Logistics | CAREC Transport Corridor 2 | 1,800.0 |
| Central Asia | CAREC | Regional | TF / Logistics | Caucasus Corridor (Armenia-Georgia Regional Transport Project) | 323.0 |
| Central Asia | CAREC | Regional | TF / Logistics | Coordinating Cargo Processing through a National Single Window | 0.2 |
| Central Asia | CAREC | Regional | TF / Logistics | Corridor Performance Monitoring and Reporting | 3.0 |
| Central Asia | CAREC | Regional | TF / Logistics | Cross Border Agreements Among the PRC, KGZ, and TAJ | 0.6 |
| Central Asia | CAREC | Regional | TF / Logistics | Customs Modernization and Infrastructure Development | 22.8 |
| Central Asia | CAREC | Regional | TF / Logistics | Development of Coordinated National Transport Policies | 1.7 |
| Central Asia | CAREC | Regional | TF / Logistics | Development of Logistics Centers and Rail Multimodal Hubs | 3.0 |
| Central Asia | CAREC | Regional | TF / Logistics | Development of Multimodal Transport Systems | 0.2 |
| Central Asia | CAREC | Regional | TF / Logistics | Development of Multimodal Transportation along CAREC Corridors | 1.0 |

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|--------------|-------|----------|-------------------|--|-----|
| Central Asia | CAREC | Regional | TF / Logistics | Enhancements of IT Systems at Customs | 5.0 |
| Central Asia | CAREC | Regional | TF / Logistics | Facilitating Border Crossing for Drivers, Traders, and Migrant Workers | 0.5 |
| Central Asia | CAREC | Regional | TF / Logistics | Facility and Process Improvements at Border Crossing Points | 2.0 |
| Central Asia | CAREC | Regional | TF / Logistics | Institutional Support for Transport and Trade Facilitation | 6.0 |
| Central Asia | CAREC | Regional | TF / Logistics | Liability Insurance System for Transport Operators | 0.1 |
| Central Asia | CAREC | Regional | TF / Logistics | Periodic Survey of Measures Affecting the Movement of Goods | 0.8 |
| Central Asia | CAREC | Regional | TF / Logistics | Product Certification Capability and Weighing Machine Standards | 0.1 |
| Central Asia | CAREC | Regional | TF / Logistics | Promote Containerization | 1.0 |
| Central Asia | CAREC | Regional | TF / Logistics | PSP in Transport Development and Trade Facilitation | 3.0 |
| Central Asia | CAREC | Regional | TF / Logistics | Rail and Intermodal Transport Feasibility Study for PRC-KGZ-UZB | 0.6 |
| Central Asia | CAREC | Regional | TF / Logistics | Reducing Transport Costs to Boost Trade | 0.2 |
| Central Asia | CAREC | Regional | TF / Logistics | Regional Customs Training and Development | 2.0 |
| Central Asia | CAREC | Regional | TF / Logistics | Simplified Transit Procedures | 0.2 |
| Central Asia | CAREC | Regional | TF / Logistics | Standardized Cargo Declaration and Other Harmonized Requirements | 0.2 |
| Central Asia | CAREC | Regional | TF / Logistics | Strengthening Capabilities of National Certification Agencies | 1.0 |
| Central Asia | CAREC | Regional | TF / Logistics | Strengthening Customs Guarantee Systems | 0.3 |
| Central Asia | CAREC | Regional | TF / Logistics | Supply Chain Training Institute | 0.5 |
| Central Asia | CAREC | Regional | TF / Logistics | Survey of Taxes and Charges Applicable to Transport Operators | 0.1 |

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|--------------|-------|------------|----------------|--|---------|
| Central Asia | CAREC | Regional | TF / Logistics | Trade and Industrial Logistic Centers with Information Exchange System | 150.0 |
| Central Asia | CAREC | Tajikistan | Energy | Fon Yagnob coal fired plant and mine | 1,500.0 |
| Central Asia | CAREC | Tajikistan | Energy | Loss reduction in power and gas sectors | 262.0 |
| Central Asia | CAREC | Tajikistan | Energy | North-South transmission line | 81.0 |
| Central Asia | CAREC | Tajikistan | Energy | Rehab of Nurek, Golovnaya, Varzob Cascade hydropower plants | 200.0 |
| Central Asia | CAREC | Tajikistan | Energy | Rogun Storage hydropower | 2,450.0 |
| Central Asia | CAREC | Tajikistan | Energy | Sangtuda II hydropower | 150.0 |
| Central Asia | CAREC | Tajikistan | Energy | Sangtuda I-Peshawar CASAREM transmission line | 500.0 |
| Central Asia | CAREC | Tajikistan | Energy | Yavan hydropower | 210.5 |
| Central Asia | TAR | Tajikistan | Rail | Access line to Kunduss (Afghanistan) | 64.0 |
| Central Asia | CAREC | Tajikistan | Rail | Dushanbe-Kyrgyz Border Railway Feasibility Study | 0.6 |
| Central Asia | TAR | Tajikistan | Rail | Electrification of Nau-Kanibadam Line section | 110.0 |
| Central Asia | CAREC | Tajikistan | Rail | Kolkhazabad-Nizhni Pianj Railway | 0.6 |
| Central Asia | TAR | Tajikistan | Rail | Modernization of telecoms and fiber optic cable | 20.2 |
| Central Asia | TAR | Tajikistan | Rail | New line Kolkhozabad-Nizhniy Pianj | 55.0 |
| Central Asia | CAREC | Tajikistan | Rail | Railway Electrification (Bekabad-Kanibadam) | 0.6 |
| Central Asia | TAR | Tajikistan | Rail | Renovation of 142 km Khoshadi-Kurgan Tube line | 28.4 |
| Central Asia | TAR | Tajikistan | Rail | Vachdat-Yavan | NA |
| Central Asia | CAREC | Tajikistan | Rail | Vahdat-Yavan Railway Feasibility Study | 0.6 |
| Central Asia | AH | Tajikistan | Road | Ajni-Pendzhikent | 4.0 |
| Central Asia | CAREC | Tajikistan | Road | Dushanbe-Khujand-Chanak-Uzbeki Border Road | 150.0 |
| Central Asia | CAREC | Tajikistan | Road | Dushanbe-Kyrgyz Border Road Rehabilitation, Phase II | 39.5 |
| Central Asia | CAREC | Tajikistan | Road | Dushanbe-Kyrgyz Border Road Rehabilitation, Phase III | 85.5 |
| Central Asia | CAREC | Tajikistan | Road | Dushanbe-Tursunzade-Uzbek Border Road | 100.0 |
| Central Asia | AH | Tajikistan | Road | Khujand-Buston | 2.0 |
| Central Asia | AH | Tajikistan | Road | Khujand-Dushanbe | 23.0 |
| Central Asia | AH | Tajikistan | Road | Khujand-Kanibadam-Isfara | 2.0 |
| Central Asia | AH | Tajikistan | Road | Korog-Border of Kyrgyzstan (to Sary Tash) | 67.0 |
| Central Asia | AH | Tajikistan | Road | Kurgan Tube-Nizhiny Panj | 4.0 |
| Central Asia | CAREC | Tajikistan | Road | Kurgan Tyube-Dusti-Nizhni Pianj Road Rehabilitation | 90.0 |
| Central Asia | CAREC | Tajikistan | Road | Transport Sector Master Plan | 0.8 |
| Central Asia | CAREC | Uzbekistan | Airport | Upgrading the Bukhara Airport | 0.6 |

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| Central Asia | CAREC | Uzbekistan | Energy | Bukhara-Ural gas pipeline and Central Asia Center-Russia gas pipeline reinforcement | 114.0 |
| Central Asia | CAREC | Uzbekistan | Energy | Sogdiana SS-Talimardjan TPP transmission line | 95.0 |
| Central Asia | CAREC | Uzbekistan | Energy | Surhand SS-Guzar SS transmission line | 57.5 |
| Central Asia | CAREC | Uzbekistan | Rail | Acquisition of New Locomotives | 25.0 |
| Central Asia | CAREC | Uzbekistan | Rail | Angren-Pap Railway Feasibility Study | 0.6 |
| Central Asia | CAREC | Uzbekistan | Rail | Electrification of Kashi-Tashguzar Baisun-Kumgurgan Section | 180.0 |
| Central Asia | CAREC | Uzbekistan | Rail | Electrification of Navoi-Bukhara and Bukhara-Kashi Sections | 195.0 |
| Central Asia | CAREC | Uzbekistan | Rail | Electrification of Navoi-Uchkuduk Section | 180.0 |
| Central Asia | CAREC | Uzbekistan | Rail | Electrification of Samarkand-Navoi and Samarkand-Kashi Sections | 185.0 |
| Central Asia | CAREC | Uzbekistan | Rail | Electrification of Tashkent-Angren Railway Feasibility Study | 0.6 |
| Central Asia | CAREC | Uzbekistan | Rail | Regional Railway | 50.0 |
| Central Asia | AH | Uzbekistan | Road | Andijon-Tashkent-Syrdaria | 82.0 |
| Central Asia | AH | Uzbekistan | Road | Bukhara-Navoi-Samarkand-Syrdaria-Tashkent | 38.0 |
| Central Asia | CAREC | Uzbekistan | Road | CAREC Regional Road Improvement | 173.5 |
| Central Asia | AH | Uzbekistan | Road | Nukus-Bukhara-Kashkadarya | 240.0 |
| Central Asia | AH | Uzbekistan | Road | Tashkent-Syrdaria-Samarkand-Surhandarya | 80.0 |
| Central Asia | AH | Uzbekistan | Road | Termez-Uzun | 40.0 |
| East Asia | CAREC | Mongolia | Airport | Improvement of Olgiy and Hovd Airports | 25.0 |
| East Asia | CAREC | Mongolia | Airport | New International Airport in Ulaanbaatar | 280.0 |
| East Asia | CAREC | Mongolia | Airport | Rehabilitation of Regional Airports | 0.5 |
| East Asia | CAREC | Mongolia | Energy | Distribution rehabilitation and power system loss reduction | 27.5 |
| East Asia | TAR | Mongolia | Rail | Capacity Strengthening of Mongolian Railway | 189.0 |
| East Asia | TAR | Mongolia | Rail | Eastern Region Railway Network | NA |
| East Asia | TAR | Mongolia | Rail | Gobi Region Railway Network | NA |
| East Asia | CAREC | Mongolia | Rail | Modernization of the Mongolia Railway | 189.0 |
| East Asia | TAR | Mongolia | Rail | Sukhbaatar-Zamin Uud 2nd Rail Line | 2,900.0 |
| East Asia | TAR | Mongolia | Rail | Zamin Uud Intermodal Terminal | NA |
| East Asia | AH | Mongolia | Road | Eastern Link: Baganuur-Ondorhaan-Choibalsan-Sumber-Border of China | 152.0 |

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| East Asia | CAREC | Mongolia | Road | Ulaanbaatar-Russian Border Road Rehabilitation | 120.0 |
| East Asia | AH | Mongolia | Road | Ulaanbaishint-Ulgii-Khovd-Bulgan-Yarant | 114.0 |
| East Asia | AH | Mongolia | Road | Western Link: Ulaanbaatar-Hovd | 188.0 |
| East Asia | CAREC | Mongolia | Road | Western Regional Road | 200.0 |
| East Asia | CAREC | Mongolia | TF / Logistics | Comprehensive Master Plan for Development of Zamyn-Uud | 0.7 |
| East Asia | CAREC | Mongolia | TF / Logistics | Customs Modernization | 6.8 |
| East Asia | CAREC | Mongolia | TF / Logistics | Development Plan for Tsaganuur Free Trade Zone | 0.3 |
| East Asia | CAREC | Mongolia | TF / Logistics | Establishment of Altanbulag Free Trade Zone | 90.0 |
| East Asia | CAREC | Mongolia | TF / Logistics | Establishment of Zamyn-Uud Free Trade Zone | 100.0 |
| East Asia | CAREC | Mongolia | TF / Logistics | Improvement of Tsaganuur Free Trade Zone | 30.0 |
| East Asia | CAREC | Mongolia | TF / Logistics | Regional Logistics Development | 0.5 |
| East Asia | CAREC | Mongolia | TF / Logistics | Ulaanbaatar Intermodal Logistics Park Feasibility Study | 0.9 |
| East Asia | CAREC | PRC | Airport | Xinjiang Airport Development | 372.5 |
| East Asia | CAREC | PRC | Rail | Double Tracking: Wuxi-Jinghe Rail Line | 394.0 |
| East Asia | CAREC | PRC | Rail | Electrification of Urumqi-Ala Shankou Rail Line | 190.0 |
| East Asia | CAREC | PRC | Rail | Jinghe-Yining-Khorgas Railway | 875.0 |
| East Asia | TAR | PRC | Rail | Jinghong-Tachilek-Denchai | 701.5 |
| East Asia | TAR | PRC | Rail | Kashi-Torugart-Arpa-Uzgen | 1,000.0 |
| East Asia | TAR | PRC | Rail | Lashio-Muse-Ruili-Dali | 2,162.0 |
| East Asia | TAR | PRC | Rail | Xiangun-Yuxi-Mohan-Thanaleng | 2,980.0 |
| East Asia | AH | PRC | Road | Jinghong-Daluo | 60.0 |
| East Asia | AH | PRC | Road | Jinghong-Mohan | 1,160.0 |
| East Asia | AH | PRC | Road | Kashi-Honqiraf | 70.0 |
| East Asia | AH | PRC | Road | Lhasa-Zhangmu | 140.0 |
| East Asia | CAREC | PRC | Road | Lianyungang-Khorgas Expressway (Guozhigou and Qin Shui He) | 393.0 |
| East Asia | CAREC | PRC | Road | Road Construction (Jinghe-Ala Shankou) | 70.0 |

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| East Asia | CAREC | PRC | Road | Xinjiang Regional Road Improvement (Korla-Kuqa) | 594.0 |
| East Asia | CAREC | PRC | TF / Logistics | Khorgas Global Logistics Center | 100.0 |
| East Asia | CAREC | PRC | TF / Logistics | Logistics Development and Capacity Building in XUAR | 0.6 |
| East Asia | CAREC | PRC | TF / Logistics | Regional Customs Cooperation | 0.4 |
| East Asia | ACP | Regional | Port | NA | 32953 |
| East Asia | TAR | Republic of Korea | Rail | Honam Line | 10,500.0 |
| East Asia | TAR | Republic of Korea | Rail | Kyoubu Line | 7,200.0 |
| East Asia | TAR | Republic of Korea | Rail | National Railway Development Plan | 43,000.0 |
| East/Southeast Asia-Central Asia | Other | Regional | Energy | Central Asia-China Natural Gas (Turkmenistan-PRC Gas Pipeline) | 2,200.0 |
| East/Southeast Asia-Central Asia | Other | Regional | Energy | Iran-Pakistan-India (IPI) Natural Gas Pipeline | 7,500.0 |
| East/Southeast Asia-Central Asia | Other | Regional | Energy | Myanmar-Bangladesh-India (MBI) Gas Pipeline | 1,000.0 |
| East/Southeast Asia-Central Asia | Other | Regional | Energy | Myanmar-India Hydro Power Project | 5,175.0 |
| East/Southeast Asia-Central Asia | Other | Regional | Energy | Turkmenistan-Afghanistan-Pakistan-India (TAPI) Gas Pipeline Project | 7,600.0 |
| Other | AH | Armenia | Road | Bavra-Gumri | 5.0 |
| Other | AH | Armenia | Road | Border of Azerbaijan-Agarak-Meghri-Border of Azerbaijan | 25.0 |
| Other | AH | Armenia | Road | Goris-Agarak (Border of Islamic Republic of Iran) | 56.0 |
| Other | AH | Armenia | Road | Vaik-Gorhayq | 30.0 |
| Other | TAR | Armenia / Iran | Rail | Gagarin-Meghri | 2,000.0 |
| Other | TAR | Georgia | Rail | Coastal Line Batumi-Kobuleti | 25.0 |

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| Other | TAR | Georgia | Rail | Connecting rail networks of Georgia & Turkey | 215.0 |
| Other | TAR | Georgia | Rail | Kulevi Oil Terminal | NA |
| Other | TAR | Georgia | Rail | Senaki-Poti Line | 25.0 |
| Other | TAR | Georgia | Rail | Tbilisi-Poti Line | 450.0 |
| Other | AH | Georgia | Road | Mtskheta-Kazbegi-Larsi | 39.0 |
| Other | AH | Georgia | Road | Poti-Batumi-Sarpi | 123.0 |
| Other | AH | Georgia | Road | Poti-Tbilisi-Red Bridge | 2,300.0 |
| Other | TAR | Georgia / Turkey | Rail | Akhalkalaki-Kars | 420.0 |
| Other | TAR | Iran | Rail | Arak-Khosravi | 820.0 |
| Other | TAR | Iran | Rail | Qazvin-Rasht-Anzali-Astara | 969.0 |
| Other | AH | Iran | Road | Bazargan – Tabriz Freeway | 250.0 |
| Other | AH | Iran | Road | Khorramabad – Andimeshk | 200.0 |
| Other | AH | Iran | Road | Qazvin – Saveh Freeway | 135.0 |
| Other | AH | Iran | Road | Qeshm Bridge in Persian Gulf | 349.0 |
| Other | AH | Iran | Road | Sirjan – Bandar Abbas | 290.0 |
| Other | ACP | Regional | Port | NA | 1637 |
| Other | AH | Russian Federation | Road | Border of Ukraine-Kursk-Voronezh-Saratov-Border of Kazakhstan | 30.0 |
| Other | AH | Russian Federation | Road | Bridge over Kigach river in Astrakhan-Atyrau road section | 11.0 |
| Other | AH | Russian Federation | Road | Moscow-Khabarovsk-Vladivostok | 950.0 |
| Other | AH | Russian Federation | Road | Moscow-Tambov-Volgograd-Astrakhan-Mahachkala | 300.0 |
| Other | AH | Russian Federation | Road | Yekaterinburg-Tumen-Ishim-Omsk | 60.0 |
| Other | TAR | Turkey | Rail | Electrification Projects | 346.9 |
| Other | TAR | Turkey | Rail | Kars-Tbilisi-Baku Railway Line | 420.0 |
| Other | TAR | Turkey | Rail | Procurement of Ferrries, Piers Extension, Establishment of Maintenance & Repair Facility | 67.0 |
| Other | TAR | Turkey | Rail | Signaling Projects | 866.5 |
| Other | TAR | Turkey | Rail | Tatvan-Van | NA |
| Other | AH | Turkey | Road | Gerede-Merzifon | 350.0 |

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| South Asia | TAR | Bangladesh | Rail | Dohazari-Gundum (border with Myanmar) | NA |
| South Asia | TAR | Bangladesh | Rail | Double tracking Akhaura-Laksham/Dhaka-Laksham chord line | 200.0 |
| South Asia | TAR | Bangladesh | Rail | Double tracking Chinkiaastana-Laksham section, including signaling | 70.0 |
| South Asia | TAR | Bangladesh | Rail | Line capacity improvement Dhaka-Tongi through intermediate block signaling | 5.0 |
| South Asia | TAR | Bangladesh | Rail | Strengthening of Jamuna Bridge for higher axle load | 25.0 |
| South Asia | TAR | Bangladesh | Rail | Upgrading of signaling at 18 stations along Abdulpur-Parbatipur section (West Zone) | 22.0 |
| South Asia | TAR | Bangladesh | Rail | Upgrading of signaling at 19 stations along Chittagong-Akhaura section (West Zone) | 25.0 |
| South Asia | AH | Bangladesh | Road | Beldanga-Panchagarh | 9.0 |
| South Asia | AH | Bangladesh | Road | Chittagong-Cox's Bazar-Ramu-Gundam | 144.0 |
| South Asia | AH | Bangladesh | Road | Dasuria-Paksey-Kushtia | 4.0 |
| South Asia | AH | Bangladesh | Road | Four laning of Daukandi-Chittagong | 191.0 |
| South Asia | AH | Bangladesh | Road | Jhenaidah-Jessore | 5.0 |
| South Asia | AH | Bhutan | Road | Phuentsholing-Thimphu double laning | 60.0 |
| South Asia | TAR | India | Rail | Dedicated Freight Corridors | 7,800.0 |
| South Asia | TAR | India | Rail | Jiribam-Kalay | 649.0 |
| South Asia | TAR | India | Rail | Moreh (India)/Tamu (Myanmar) | 649.0 |
| South Asia | AH | India | Road | India-Nepal border | 1.0 |
| South Asia | AH | India | Road | Madurai-Dhanushkodi | 2.0 |
| South Asia | AH | India | Road | Shillong-Dwaki | 6.0 |
| South Asia | AH | India | Road | Siliguri-Fulbari Mod-Border of Bangladesh | 2.0 |
| South Asia | AH | Nepal | Road | Kathmandu-Birgunj ICD link road | 80.0 |
| South Asia | AH | Nepal | Road | Naubise-Thankot (Tunnel)-Kathmandu-Kodari improvement and upgrading | 24.0 |
| South Asia | AH | Nepal | Road | New Koshi bridge at Chatara and widening of bridges in Pathalaiya-Dhalkebar | 31.0 |
| South Asia | Other | Regional | Energy | Bangladesh-Bhutan-Nepal-India Multilateral Power Line Interconnection | 9.0 |
| South Asia | Other | Regional | Energy | Bangladesh-India Power Project (Tata Group Proposal) | 1,025.0 |
| South Asia | Other | Regional | Energy | Bhutan-India HPP Projects | 3,744.1 |

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| South Asia | Other | Regional | Energy | Green Power Development (Bhutan) | 234.5 |
| South Asia | SASEC | Regional | Energy | India-Sri Lanka Grid Connection | 133.0 |
| South Asia | Other | Regional | Energy | West Seti Hydroelectric Project (NEP) | 1,700.0 |
| South Asia | ACP | Regional | Port | NA | 4309 |
| South Asia | Other | Regional | TF / Logistics | Improving Connectivity and Destination Infrastructure for Sub regional Tourism Development | 89.5 |
| South Asia | SASEC | Regional | TF / Logistics | SASEC Information Highway Project (Bangladesh, Bhutan, India and Nepal) | 24.0 |
| South Asia | SASEC | Regional | TF / Logistics | Sub-regional Transport Logistics & Trade Facilitation Project (Bangladesh) | 23.0 |
| South Asia | SASEC | Regional | TF / Logistics | Sub-regional Transport Logistics & Trade Facilitation Project (Bhutan) | 48.0 |
| South Asia | SASEC | Regional | TF / Logistics | Sub-regional Transport Logistics & Trade Facilitation Project (India) | 50.0 |
| South Asia | SASEC | Regional | TF / Logistics | Sub-regional Transport Logistics & Trade Facilitation Project (Nepal) | 58.0 |
| South Asia | TAR | Sri Lanka | Rail | Coast Line | NA |
| South Asia | TAR | Sri Lanka | Rail | Connecting Line | NA |
| South Asia | TAR | Sri Lanka | Rail | Northern Line | NA |
| South Asia | AH | Sri Lanka | Road | Land bridge connecting Sri Lanka and India | 880.0 |
| South Asia | AH | Sri Lanka | Road | Talaimannar-Medawachchiya | 36.0 |
| Southeast Asia | TAR | Cambodia | Rail | Bat Deng-Loc Ninh-HCM City | 480.0 |
| Southeast Asia | TAR | Cambodia | Rail | Poipet-Sisophon-Aranyaprathet | 80.0 |
| Southeast Asia | GMS | Cambodia | Rail | Rehabilitation of the Railway | 73.0 |
| Southeast Asia | AH | Cambodia | Road | Banlung (Rattanak Kiri)-Oyadav- Viet Nam Border | 27.0 |
| Southeast Asia | AH | Cambodia | Road | Battambang-Palin-Thailand Border | 40.0 |
| Southeast Asia | AH | Cambodia | Road | Neak Leoung Mekong River Bridge | 200.0 |
| Southeast Asia | AH | Cambodia | Road | NR7 Jct at Pratheath to Chhlong | 20.0 |
| Southeast Asia | AH | Cambodia | Road | NR7 Jct to Banlung (Rattanak Kiri) | 44.0 |
| Southeast Asia | AH | Cambodia | Road | Preak Kdam-Thnal Keng | 6.0 |
| Southeast Asia | AH | Cambodia | Road | Siem Reap-Stung Treng | 260.0 |
| Southeast Asia | AH | Cambodia | Road | Snoul to Sen Monorom (Mondulkiri)-Lumphat (Rattanak Kiri) | 117.0 |
| Southeast Asia | AH | Indonesia | Road | Improvement and upgrading of various sections (AH25) | 15.0 |

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| Southeast Asia | AH | Indonesia | Road | Improvement and upgrading of various sections (AH2) | 14.0 |
| Southeast Asia | TAR | Lao PDR | Rail | Bua Yai-Savannakhet | 6.3 |
| Southeast Asia | TAR | Lao PDR | Rail | Ubonratchatani-Dong Ha | 710.0 |
| Southeast Asia | TAR | Lao PDR | Rail | Vientiane-Tan Ap | 732.0 |
| Southeast Asia | TAR | Lao PDR | Rail | Xiangun-Yuxi-Mohan-Thanaleng | 1,000.0 |
| Southeast Asia | AH | Lao PDR | Road | Oudomaxay-Muangkhua-Tai Chang | 40.0 |
| Southeast Asia | AH | Lao PDR | Road | Phiafai-Attapeu (NH18A) | 23.0 |
| Southeast Asia | GMS | Lao PDR | Road | Route14A: Junction Route 16-Lao PDR/Cambodian border | 33.0 |
| Southeast Asia | GMS | Lao PDR | Road | Route16A: Junction Route 16 Junction Route 11 | 34.0 |
| Southeast Asia | GMS | Lao PDR | Road | Second GMS Northern Transport Network Improvement: Luangprabang-Thanh Hoa | 40.0 |
| Southeast Asia | GMS | Lao PDR | TF / Logistics | GMS East-West Corridor | 23.0 |
| Southeast Asia | TAR | Myanmar | Rail | Jinghong-Tachilek-Denchai | 436.0 |
| Southeast Asia | TAR | Myanmar | Rail | Jiribam-Kalay | 296.0 |
| Southeast Asia | TAR | Myanmar | Rail | Lashio-Muse-Ruili-Dali | 759.0 |
| Southeast Asia | TAR | Myanmar | Rail | Thanphyuzayat-Namtok | 246.0 |
| Southeast Asia | AH | Myanmar | Road | Kyaing Tong-Takaw-Loilem-Taunggyi | 23.0 |
| Southeast Asia | AH | Myanmar | Road | Monywa-Kalay/Kalewa | 40.0 |
| Southeast Asia | AH | Myanmar | Road | Myawadi (Border of Thailand)-Kawkareik | 19.0 |
| Southeast Asia | AH | Philippines | Road | Candelaria Bypass | 5.0 |
| Southeast Asia | AH | Philippines | Road | Cebu North Coastal Road | 6.0 |
| Southeast Asia | AH | Philippines | Road | Cotabato City Bypass | 7.0 |
| Southeast Asia | AH | Philippines | Road | Daraga Diversion Road | 9.0 |
| Southeast Asia | AH | Philippines | Road | Davao City Coastal Road | 6.0 |
| Southeast Asia | AH | Philippines | Road | Digos City Bypass | 4.0 |
| Southeast Asia | AH | Philippines | Road | General Santos City Bypass | 9.0 |
| Southeast Asia | AH | Philippines | Road | Koronadal City Bypass | 6.0 |
| Southeast Asia | AH | Philippines | Road | Palo Bypass | 2.0 |
| Southeast Asia | AH | Philippines | Road | Panabo City Bypass | 6.0 |
| Southeast Asia | AH | Philippines | Road | San Jose City Bypass | 8.0 |
| Southeast Asia | AH | Philippines | Road | Santiago City Bypass | 2.0 |
| Southeast Asia | AH | Philippines | Road | Sariaya Bypass | 5.0 |
| Southeast Asia | AH | Philippines | Road | Sipocot-Putiao Diversion Road | 36.0 |

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| Southeast Asia | AH | Philippines | Road | Tagum City Bypass | 8.0 |
| Southeast Asia | AH | Philippines | Road | Tiaong Bypass | 2.0 |
| Southeast Asia | AH | Philippines | Road | Tuguegarao City Bypass | 5.0 |
| Southeast Asia | ASEAN | PRC | Energy | Jinghong dam on the upper Mekong in PRC's Yunnan province | 1200 |
| Southeast Asia | GMS | PRC | Rail | Mengzhi-Hekou railway line | 1,450.0 |
| Southeast Asia | GMS | PRC | Road | Lao PDR-Myanmar: Bridge over Mekong bet. Xieng Kok & Kyaing Lap inc. access road | 34.0 |
| Southeast Asia | GMS | PRC | Road | Western Yunnan Roads Development II | 250.0 |
| Southeast Asia | Other | Regional | Energy | Batam (Indonesia)-Singapore PTL Project | 177.0 |
| Southeast Asia | BIMP-EAGA | Regional | Energy | BIMP-EAGA Renewable Energy Investment Fund | 100.0 |
| Southeast Asia | GMS | Regional | Energy | Cambodia: Transmission Line-220kV link between Kampot and Shihanoukville | 52.4 |
| Southeast Asia | Other | Regional | Energy | Cambodia-Viet Nam; Sambor CPEC HPP | 1,059.0 |
| Southeast Asia | GMS | Regional | Energy | Developing the Regional Transmission and Regulatory Authority | 1.0 |
| Southeast Asia | GMS | Regional | Energy | Lao PDR: GMS Northern Power Transmission | 53.5 |
| Southeast Asia | GMS | Regional | Energy | Lao PDR-Cambodia-Viet Nam Power Interconnection: A Study | 1.3 |
| Southeast Asia | GMS | Regional | Energy | Lao PDR-Thailand: GMS Nabong-Udon Thani Power Transmission and Interconnection | 110.0 |
| Southeast Asia | GMS | Regional | Energy | Lao PDR-Thailand: Nam Ngiep 1 261 MW Hydropower Project | 380.0 |
| Southeast Asia | GMS | Regional | Energy | Lao PDR-Thailand: Nam Ngum 3 440 MW Hydropower Project | 600.0 |
| Southeast Asia | GMS | Regional | Energy | Lao PDR-Thailand: Xe Pian-Xenamnoy 390 MW Hydropower Project | 400.0 |
| Southeast Asia | Other | Regional | Energy | Lao PDR-Thailand; Nam Ngum HPP | 1,401.0 |
| Southeast Asia | Other | Regional | Energy | Lao PDR-Thailand; NAM Theun 2 HPP | 2,478.0 |
| Southeast Asia | Other | Regional | Energy | Lao PDR-Thailand; Xe Khaman 1 | 1,066.0 |
| Southeast Asia | Other | Regional | Energy | Lao PDR-Thailand; Xe Pian HPP | 888.0 |
| Southeast Asia | Other | Regional | Energy | Lao PDR-Viet Nam PTL Project | 118.0 |
| Southeast Asia | GMS | Regional | Energy | Lao PDR-Viet Nam: GMS 500 kV Lao PDR-Viet Nam Interconnection (Ban Sok-Pleiku) | 270.0 |

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| Southeast Asia | Other | Regional | Energy | Malaysia-Brunei PTL Project | 18.0 |
| Southeast Asia | Other | Regional | Energy | Malaysia-West Kalimantan PTL | 18.0 |
| Southeast Asia | Other | Regional | Energy | Myanmar-Thailand; Tasang HPP | 8,200.0 |
| Southeast Asia | GMS | Regional | Energy | Nam kong 1 (Lao PDR) 100 MW Hydropower Project | 250.0 |
| Southeast Asia | GMS | Regional | Energy | Nam Mo-Ban Mai Interconnection Project | 14.4 |
| Southeast Asia | Other | Regional | Energy | Peninsular Malaysia-Sumatra | 143.0 |
| Southeast Asia | ASEAN | Regional | Energy | Power market/power trade system development | 183 |
| Southeast Asia | GMS | Regional | Energy | PRC-Thailand Power Transmission through Lao PDR | 70.0 |
| Southeast Asia | Other | Regional | Energy | PRC-Thailand; Jinghong HPP | 3,417.0 |
| Southeast Asia | Other | Regional | Energy | PRC-Thailand; Nuozhadu HPP | 12,528.0 |
| Southeast Asia | ASEAN | Regional | Energy | Private sector mobilization for large hydro dam and transmission line construction | 800 |
| Southeast Asia | ASEAN | Regional | Energy | Regional transmission lines and switching stations; | 2400 |
| Southeast Asia | GMS | Regional | Energy | Sub regional Strategy for Cooperation in Renewable Energy | 1.2 |
| Southeast Asia | Other | Regional | Energy | Thailand-Cambodia Transmission PTL | 7.0 |
| Southeast Asia | Other | Regional | Energy | Thailand-Lao PRD PTL | 125.0 |
| Southeast Asia | Other | Regional | Energy | Thailand-Myanmar PTL | 91.0 |
| Southeast Asia | ASEAN | Regional | Energy | Trans-ASEAN Gas Pipeline | 7000 |
| Southeast Asia | Other | Regional | Energy | Viet Nam-Cambodia PTL | 7.0 |
| Southeast Asia | GMS | Regional | Energy | Viet Nam-PRC (Yunnan) 500kV Power Interconnection | 400.0 |
| Southeast Asia | ACP | Regional | Port | NA | 9525 |
| Southeast Asia | ASEAN | Regional | Rail | Cambodia-Lao PDR-Viet Nam | 1800 |
| Southeast Asia | ASEAN | Regional | Rail | Lao PDR-PRC | 1100 |
| Southeast Asia | ASEAN | Regional | Rail | Lao PDR-PRC | 5700 |
| Southeast Asia | ASEAN | Regional | Rail | Lao PDR-Viet Nam-Thailand | 1100 |
| Southeast Asia | ASEAN | Regional | Rail | Lao PDR-Viet Nam-Thailand | 1100 |
| Southeast Asia | ASEAN | Regional | Rail | Myanmar-Thailand-PRC | 6000 |
| Southeast Asia | TAR | Thailand | Rail | Bua Yai-Savannakhet | 900.0 |
| Southeast Asia | TAR | Thailand | Rail | Jinghong-Tachilek-Denchai | 650.0 |
| Southeast Asia | TAR | Thailand | Rail | Poipet-Sisophon-Aranyaprathet | 0.5 |
| Southeast Asia | TAR | Thailand | Rail | Thanphyuzayat-Namtok | 491.0 |
| Southeast Asia | TAR | Thailand | Rail | Ubonratchatani-Dong Ha | 288.0 |
| Southeast Asia | GMS | Thailand | Road | Highway Expansion Project | 230.0 |
| Southeast Asia | GMS | Viet Nam | Port | Van Phong Deep Sea Port | 200.0 |

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| Southeast Asia | TAR | Viet Nam | Rail | Bat Deng-Loc Ninh-HCM City | 350.0 |
| Southeast Asia | TAR | Viet Nam | Rail | Ubonratchatani-Dong Ha | 226.0 |
| Southeast Asia | TAR | Viet Nam | Rail | Vientiane-Tan Ap | 143.0 |
| Southeast Asia | AH | Viet Nam | Road | Bien Hoa-Vung Tau Expressway (4-6 lanes) | 600.0 |
| Southeast Asia | AH | Viet Nam | Road | Da Nang-Quang Ngai (4 lanes) | 700.0 |
| Southeast Asia | GMS | Viet Nam | Road | Dau Giay-Lien Khuong Expressway | 600.0 |
| Southeast Asia | GMS | Viet Nam | Road | GMS Ha Long-Mong Cai Highway | 1,000.0 |
| Southeast Asia | GMS | Viet Nam | Road | GMS Southern Coastal Road Corridor II | 140.0 |
| Southeast Asia | AH | Viet Nam | Road | Ha Noi Ring Road | 600.0 |
| Southeast Asia | AH | Viet Nam | Road | Ha Noi-Hai Phong Expressway (4-6 lanes) | 410.0 |
| Southeast Asia | GMS | Viet Nam | Road | Ha Noi-Lang Son Expressway | 300.0 |
| Southeast Asia | AH | Viet Nam | Road | Ha Noi-Lao Cai Expressway | 600.0 |
| Southeast Asia | GMS | Viet Nam | Road | Kunming-Haiphong Transport Corridor-Noi Bai-Lao Cai Hway | 1,216.0 |
| Southeast Asia | AH | Viet Nam | Road | Rehabilitation of Soai Rap Assess Channel in Ho Chi Minh City | 120.0 |
| Southeast Asia | AH | Viet Nam | Road | Sai Gon-Long Thanh-Dau Day (4-6 lanes) | 350.0 |
| Southeast Asia | GMS | Viet Nam | Road | Second GMS Northern Transport Network Improvement: Luangprabang-Thanh Hoa | 95.0 |
| Southeast Asia | AH | Viet Nam | Road | Van Phong Transshipment Hubport | 200.0 |
| Southeast Asia | AH | Viet Nam | Road | Vinh-Cau Treo rehabilitation | 44.0 |
| Southeast Asia | GMS | Viet Nam | TF / Logistics | GMS East-West Corridor | 140.0 |
| | | | | | |
| TOTAL | | | | | 320,642.8 |