Asia-Pacific
Economic Cooperation

# Promoting Infrastructure Investment in APEC Region through Public-Private Partnerships

## - A Research Report by Renmin University of China

**Beijing Hotel**

**Investment Experts' Group**
**August 2014**

# Promoting Infrastructure Investment in APEC Region through Public-Private Partnerships

**A Research Report by Renmin University of China**

**August 13, 2014**


Renmin University of China is a research-oriented comprehensive university focusing on humanities and social sciences. It is directly under the Ministry of Education of China and is jointly financed and supported by China's Ministry of Education and the Beijing Municipal Government. With a strong mission in "study for serving people", Renmin University of China has been ranked as one of the top universities in China and the key institutes in social science field since 1950. It is now one of the universities which are listed in China's "985" Project and "211" Key Universities Project. Renmin University of China believes that the responsibility of research institute is to understand the world and society, to promote civilization, to innovate, to educate, and to serve the society. To fulfill these responsibilities, Renmin University of China devotes its resources to support high-quality education and research, to provide think-tank functions to serve the society, to facilitate research in major political, economic, cultural and social issues in China and the world, and to pursue strong intellectual support and scientific research for development and social progress as a whole.

# Executive Summary

The 2014 APEC IEG Public-Private Dialogue with the theme “Promoting Infrastructure Investment in the APEC Region through Public-Private Partnership” was held on August 13, 2014 in Beijng, China. Representatives from 15 APEC member economies including China, Australia, Chile, Hong Kong, China, Indonesia, Japan, Republic of Korea, Malaysia, Mexico, Papua New Guinea, Peru, The Philippines, Russia, Thailand and Viet Nam participated. The consultant agency as well as the organizer, Renmin University of China, published a research report at this Dialogue entitled “Promoting Infrastructure Investment in the APEC Region through Public-Private Partnership.”

The core messages of this report are as follows:

∗ Rapid economic development in the Asia-Pacific region has greatly increased infrastructural demand in member economies. Existing financing and operating mechanisms are unable to meet the growing infrastructural investment demand.

∗ Public-Private Partnerships (PPP) is an effective way to solve the problem of capital shortage of infrastructure construction. However, there are problems applying this strategy in Asia-Pacific's developing economies, especially regarding cross-border capital and projects.

∗ This report advocates a new approach to using PPP based on international cooperation, combining advantages of traditional PPP and helping achieve greater connectivity within and across the APEC region, with an operating radius in a single economy in most circumstances and extending to the economies in the Asia-Pacific region.

∗ The basic design architecture of the proposed A-PPP uses an “A-PPP Center,” an organization jointly established by all APEC member economies, including a project library and a capital pool, “A-PPP Mutual Fund," in which sovereign wealth funds and private investors will invest, to be used for regional infrastructure investment.

∗ A-PPP will not increase costs for the government, while it will greatly reduce transaction costs and investment risks for borrowers and investors through, mass operation and marketization. Therefore, this approach has a unique advantage.

∗ The long-term A-PPP vision is to promote infrastructural investment in the Asia-Pacific region, increasingly transforming the region from economies based on internal actions in individual economies to more regional cooperation and integration, achieving greater cross-

border infrastructural project coordination, and improving the overall infrastructural quality of member economies.

∗ Coming out of this conference, the proposed roadmap to advancing A-PPP is as follows:

The first steps will be to promote the PPP concept in APEC member economies, implement rules based on A-PPP common norms , establish an A-PPP research center, and improve capacity building in each member economy.

The second steps will include establishing an A-PPP consulting center, setting up an expert database, and implementing A-PPP pilot projects.

The third steps will include establishment of an A-PPP operations center - which, combined with a research center and the consulting center, will constitute the A-PPP center- as well as the A-PPP mutual fund and project library and capital pool.

# REPORT

Infrastructure is a prerequisite for social and economic development. Inadequate infrastructure is one of the main obstacles that limit developing economies. APEC always attaches great importance to infrastructural development to promote regional prosperity. One of the three priorities China identified for APEC 2014 is "Strengthening Comprehensive Connectivity and Infrastructure Investment." Traditionally, public funds are the main source of funding for infrastructural development; however, current fiscal systems in the member economies cannot meet future capital requirements for infrastructural development. Therefore, the introduction of new funding sources, especially through public-private partnerships to promote infrastructure investment is an effective way to alleviate the problem of capital shortage for infrastructural development.

## Recommendations:

### 1 Use PPP to promote infrastructural investment in the Asia-Pacific region

#### (1) There is a strong demand for infrastructural investment in the rapidly developing Asia-Pacific region

The Asia-Pacific region is the world's fastest growing economy, the most economically vibrant region, and a region with some of the closest trade ties between its member economies. In 2012, GDP in APEC member economies reached $41.75 trillion, accounting for about 58% of the global GDP. In 2013, the total trade volume of APEC member economies accounted for about 46% of global trade. Among the world's 20 largest trading economies, ten were APEC members. Regional trade played a dominant role in member economies with intra-regional trade accounting for more than 65% of the total APEC trade volume.

The level of infrastructural development of the region, however, lags behind its economic development. There is a big gap in infrastructural level among the APEC's developed and developing economies (as shown in table 1). At the same time, there is a lack of connectivity between existing infrastructures; for example, cross-border transportation, energy, and other infrastructural connections are woefully inadequate. The vast differences in infrastructural development and the lack of connections between infrastructures have hindered connectivity between members and become an important obstacle to improved supply chain performance in the region.

Rapid economic and trade development have greatly increased demand for infrastructure in member economies. According to the research by the Asian Development Bank (ADBI, 2009), to meet the requirements for economic development, urbanization and poverty reduction, 30 developing economies in Asia and Oceania alone will require more than $750 billion infrastructure investment per year by 2020. According to estimates of Renmin University of China, over the next 10 years APEC developing economies need to spend $950 billion on infrastructural construction annually and total infrastructure demand will reach $2 trillion a year, coupled with demand from the region's more developed economies.

**(2) Existing mechanisms are unable to meet huge infrastructural investment demand.**

Traditionally, infrastructure projects rely mainly on public funding. After the global financial crisis, this funding faced greater constraints in both developed and developing economies (the evolution of member governments' fiscal situations and the government debt of each member are shown in table 2) and could not meet increasing demand for infrastructural investment. In developing economies, because governments' ability to raise funds is generally weak, governments' financial gaps are larger (a comparison of each member's ability to raise funds is shown in table 3). Therefore, public funding cannot meet future capital requirement for infrastructure projects.

Infrastructure projects often cannot readily raise money from private financial markets. Infrastructure projects require a large scale of investment, have a long investment cycle, involve relatively high risk and above all, generate primarily public benefits in most

circumstances. Therefore, such projects are less attractive to private capital; although in some economies with relatively developed financial markets, some private capital can be attracted to flow in through financial innovation; however, the scale is still not enough to meet the demand. In economies with less developed financial markets and insufficient private capital, it is even harder for infrastructure projects to raise funds from private financial markets.

In addition to government and financial markets, loans and aid from international development institutions in particular multilateral organizations, are another traditional source of funds for the member economies for infrastructure financing, especially for the less developed economies. However, this mechanism comes with some problems. On one hand, the scale of investment available from multilateral international organizations is often limited. (The size of loans made in recent years by major international development institutions to Asia-Pacific region economies is shown in table 4). On the other hand, international organizations usually bear high manangement cost and are generally not highly sensitive to market signals.

As a result, existing financing and operating mechanisms, including government, private financial markets and international development agencies are unable to meet increasing demand for infrastructure investment, particularly in developing economies. According to estimates by Standard and Poor's Corporation, the global infrastructure investment "gap" will reach $500 billion annually (S&P, 2014).

**(3) PPP mechanism provides a solution; however, some crucial problems concerning PPP promotion still need to be solved**

A key solution to the infrastructural investment funding gap is to introduce Public-Private Partnerships. High domestic saving rates in member economies make private capital a possible source. PPP has the potential to better utilize the advantages of all parties to improve infrastructural construction and operating efficiency. Many obstacles remain to PPP in Asia-Pacific's developing economies, especially concerning cross-border capital and projects. These include:

The first issue is how to create a few infrastructural investment projects and relevant financial products which are risk/reward structure attractive, economically feasible and easy to operate. Different risk/reward structures appeal to different private investors; therefore financial innovation is needed to create different products satisfying the diversified needs of these private investors. Due to the absence of authoritative organization, it often takes a long time to conduct a project's economic feasibility assessment, which causes the negotiation process to take far too long. In addition, due to the lack of relevant technical personnel and management experience in PPP practice, the efficiency of project construction and operation has been low, making it more difficult to realize project benefits.

The second issue is how to create a capital supply mechanism that can overcome capital flow barriers and reduce government financial risk exposure. In developing economies, a shortage of available private capital will be a key obstacle to PPP development. Therefore, it is necessary to find ways to attract cross-border capital. Currently, there are many barriers to cross-border capital flow including currency exchange risks and differences in laws and regulations among member economies. Related to this are other issues of how to make infrastructure investment projects and related financial products attractive to private capital, using financial innovations to overcome these barriers. In addition, if PPP project risks cannot be effectively diversified, projects face the risk of a break in the capital chain in times of crisis, intensifying public financial risk and likely leading to project interruption.

A third set of problems involve creating new mechanisms to utilize the advantages of international organizations. There are opportunities to create new mechanisms that combine the advantages of multiple international organizations (shown in table 6) including new international infrastructural investment institutions such as the China-ASEAN Fund on Investment Cooperation and traditional multilateral development agencies such as World Bank and Asian Development Bank. Traditional multilateral development agencies have advantages of low capital costs and multiple investment interests. However, they have limited funding sources and are historically not highly sensitive to market signals, compared with private capital. New international infrastructure investment institutions, on the other hand, similar to regional equity funds, have advantages of greater market

sensitivity, but their scale is usually too small to spread risks among many projects. Creating a new infrastructure financing organization that combines advantages of public and private-oriented mechanisms, and therefore would have advantages in promoting infrastructure investment in regional developing economies.

## 2 Build "APEC-PPP" analytical framework and its advantages in promoting infrastructure investment in Asia-Pacific region

### （1）"APEC-PPP model" and its design idea

We advocate a new PPP model based on international cooperation, combining advantages from the traditional PPP model and helping achieve APEC regional connectivity. Since the model is established within the APEC framework and APEC will take the lead in its implementation, we can call it the "APEC-PPP model" (or simply "A-PPP model"). Compared to traditional PPP, the A-PPP lies in the fact that the operating radius of PPP can be extended to the economies of the Asia-Pacific region. Under this framework, the host government is the public sector and the private sector is composed of investors, designers, contractors and operators within the economy, as well as capital suppliers and contractors from other regional member economies. The "partnership" is reflected through joint participation in project development, management and financing by the public sector and the expanded "private" sector.

The "A-PPP model" includes two special mechanisms – a project library and a financial pool - connected with an organizational center. APEC economies will establish an A-PPP "center" dedicated to regional infrastructure project development. A-PPP center would then establish cooperative relationships with host governments of each economy, which will send experts to guide project development, inject initial capital to set up public-private corporations known as Special Purpose Vehicles for each project, assist the Special Purpose Vehicle in raising funding from the global financial system and match the most suitable contractors for project development. A "Project Library" will organize and improve ability to match projects with private investors. A "Funding Pool" will provide funding sources for the infrastructure Special Purpose Vehicles. This capital pool will be

formed within the A-PPP framework to support projects from the Project Library, in addition to seeking outside financing from financial institutions and the international capital market. Pool funding sources include voluntary subscriptions by APEC governments, sovereign wealth funds and investments made by private institutional investors, together forming the APEC mutual fund for infrastructural investment. The fund will be affiliated within the APEC framework, managed by a professional team and independently operated. A-PPP will operate in a non-profit model but will pursue efficiency and follow market-oriented principles as it pursues diversified funding sources for infrastructural investment. We hope such an approach will make infrastructural investment in the Asia-Pacific region take its place in the upfront rankings of the world.

**(2) The framework of the "A-PPP model" and its governance mechanism**

The proposal is to establish an A-PPP organization under the APEC framework. A planning group will receive guidance from APEC's relevant committee, create a development strategy and coordinate the relationship among sub-agencies. The group is to be composed of two sub-agencies: one is A-PPP "center," responsible for project development and intermediary service; the other is A-PPP mutual fund, responsible for project financial support. Each sub-agency will establish a board of directors composed of member economies and private shareholder investors, in some proportion to be determined, and will hire a professional management team responsible for daily operation (The proposed A-PPP working framework shown in figure 1).

A-PPP center will be established using subscribed capital shares made by the government of APEC economies. By subscribing to a share, the government will purchase a financial reserve in the center. When the A-PPP center collaborates with the public sectors of the PPP economies, its financial reserve can be used to compensate the possible loss. A-PPP center will use its capital to invest in projects in various regional economies. therefore reducing the binding constraint that domestic fiscal resources impose on the public sector of the invested economies. APEC member economies will make voluntary financial contributions, with the fund open to all members. When the member economies have infrastructural investment needs, they can apply to the A- PPP center. Economies

with an invested stake in A-PPP pool fund will have priority in their applications and can be provided preferential conditions. The economies without a stake might be asked to pay additional fees.

A-PPP center staff will be mainly composed of project investment experts and the management team. Duties of the A-PPP center include: confer with governments making project applications, screen and select appropriate projects through its expert committee, establish Special Purpose Vehicles (Public-Private Corporation) in accordance with international standards; encourage each economy to set up its own A-PPP sub-center and expert database; train PPP specialists; and focus on improving project management capacity in developing economies.

The key focus area under A-PPP will be infrastructure projects with cash flow returns rather than poverty reduction projects, because these more readily support cross-border infrastructural investment; at the same time, the A-PPP will pay particular attention to infrastructural projects that have important implications for improvement of supply chain performance.

Investment by the A-PPP center will follow a unified standard. Similar projects can be conducted simultaneously, which may lower costs and improve efficiency through technical replication. Once the A-PPP center and a host government jointly establish a Special Purpose Vehicle (Public-Private Corporation), international rules should be followed and bids will be open to global investors. Private sector contractor companies will apply to the center and go through a competitive bidding process.

The A-PPP center will strengthen cooperation with international organizations such as the World Bank, International Monetary Fund and Asian Development Bank and share their Project Database with these agencies. The A-PPP center will maintain a relatively high credit rating due to paid-in capital by the multiple economies and this will help maintain and extend financing channels to leasing companies, commercial banks, capital market, etc.

The A-PPP mutual fund will be established by the Asia-Pacific member economies with relatively abundant capital. The fund will be open to all members, both for contributions and projects to be funded. The government of each member economy can

subscribe a certain share. Long-term capital from private sector pension funds, insurance funds and asset management companies can also join. The vision is for the A-PPP mutual fund to be operated on commercial principles, and loans will be made to infrastructural projects that have qualified credit ratings. A-PPP mutual fund, World Bank, Asian Development Bank and the Development Bank of the BRICS economies to be complementary with each other in providing funding for infrastructure investment in Asia-Pacific region.

The A-PPP center can act as an intermediary between mutual funds and specific projects, designing specific credit plans for specific projects, strengthening its credibility and helping to get mutual fund loans. A-PPP center can also "wrap" projects and seek financing from A-PPP mutual funds in the form of a project package to reduce credit risks.

**（3）"A-PPP"s advantages over traditional governance mechanisms**

First, the A-PPP model builds a project pool by collecting and summarizing project information from each member economy, and will break down barriers to private sector participation in infrastructure projects investment. In addition, the A-PPP model will establish an efficient financial support mechanism and systematized treatment approach for infrastructure investment finance, which will also reduce project negotiation cost and improve project operability.

The A-PPP model pools capital from the private sector through a multilateral mechanism with government guarantees that will effectively reduce project and sovereign risk, improve infrastructure project attractiveness to private investors, optimize resource allocation across economies and foster stable funding sources for infrastructure investment.

The A-PPP model uses a market-oriented mechanism that will effectively promote simpler operating procedures than currently exist in multilateral development agencies while promoting overall efficiency. The A-PPP center and regional governments will establish a "one –to- many" cooperation approach that will lower barriers to international collaboration and accelerate regional integration. Such an approach is particularly suitable to promoting large-scale cross-border infrastructure investment and connectivity in the region more generally.

## 3 Promote “APEC-PPP” roadmap and policy suggestions

The long-term vision of the A-PPP model is to promote infrastructure investment in the Asia-Pacific region through regional cooperation, achieve regional infrastructure integration, - especially through more cross-border infrastructure project cooperation - improve the infrastructural quality level and capabilities across the region's economies, optimize capacity utilization and allocation of financial resources, and thus improve the overall welfare of the Asia-Pacific region.

### （1） Promote PPP concept among APEC economies and set up A-PPP research center

Under the APEC framework, increase PPP policy dialogue on infrastructure investment, invite regional governments and investors to hold meetings, promote education about infrastructure investment, develop A-PPP best practices and prepare an infrastructure investment guide, eventually making the PPP concept and corresponding experience and technology more familiar both to regional governments and industrial and commercial enterprises.

Through the case study summary, we will further improve risk-sharing, benefit-sharing and corporate governance mechanisms in the infrastructure project, promote establishment of standardized international rules and reduce investors' coordination, management and supervision costs.

Improved governance will be beneficial to PPP implementation. This includes favorable financial environments to attract foreign investment, encouraging governments to use the *ABAC Enablers of Infrastructure Checklist* as a reference to conduct self-assessments, eliminating barriers to cooperation between government and private sector in infrastructure investment, and strengthening capacity building.

Another goal is encouraging each APEC economy to establish A-PPP research centers coordinated by APEC, which eventually will be connected to the overall regional network. Each A-PPP research center will work with APEC institutions, for example, IEG, CTI,

SOM, SFOM and ABAC, systematically studying the A-PPP model, regularly publishing research reports and carrying out relevant training.

Other activities important for infrastructure investment include conducting investigations on infrastructure investment, projecting investment demand and assessing its benefits and risks, and establishing the financial reserves and project library as part of the A-PPP center.

**（2） Establish A-PPP consulting center and expert database, and carry out A-PPP pilots**

We propose establishment of A-PPP consulting centers across the region, encouraging each APEC economy to establish sub-centers that work with the regional consulting center. Expert databases will be set up in these A-PPP consulting centers, and professional PPP specialists will be recruited globally.

The main functions of A-PPP consulting centers will be providing professional guidance and technical support, assessing project feasibility, selecting high-quality projects, providing transparent information on infrastructure projects to the private sector and serving as an intermediary to promote cooperation between governments and private sector.

The regional consulting center will help set up infrastructure pilot projects under the A-PPP framework and introduce multilateral equity investors to the establishment of Special Purpose Vehicles while diversifying risk through engagement with investors from different economies.

Efforts will be made to ameliorate institutional obstacles such as trade protectionism and capital controls, through a series of financial innovations, including trade financing and financial leasing. Overseas equity participants can participate in PPP projects through trade in goods and equipment, and can act as the project contractor, through which capital import and commodity import will both be realized. To reduce exchange rate risks, A-PPP can consider establishing currency swap agreements among PPP participants, using a basket of currencies to hedge currency risk.

### （3） Establish A-PPP operating center and A-PPP infrastructure mutual fund

An A-PPP operations center will be established at the APEC level, responsible for specific operations of PPP projects and forming the “A-PPP center” jointly with the A-PPP research center and A-PPP consulting center. Each member economy will build their corresponding, "overall" sub-center (combining research, consultation and operations).

A-PPP "center" integrates research, consultation and operation, establishes the regional infrastructure project library, adopts a continuous, standard and transparent selection and evaluation mechanism, performs comprehensive overall planning on infrastructure investment and finance in the region, and seeks to optimize allocation of regional resources in the design, construction and operation of the private sector contracting.

Using the project library, the A-PPP center will engage developing economies regarding their infrastructure investment needs. These economies may also have financial stakes, but on a voluntary basis. A board of directors and management team will be developed, and capital funds will be raised for establishment of PPP Special Purpose Vehicles and establishment of the institutionalized international investment platform.

Through various financial innovations, the A-PPP center can expand infrastructural funding sources. By such means as asset securitization, for example, assets with cash flow returns can be packaged and designed into securities with different credit ratings, and sold to investors in capital markets. The A-PPP center can also collect information related to project loan demand, forming a portfolio to seek finance from financial institutions and dispersing the risk of individual projects.

As previously noted, the infrastructural mutual fund will be initiated by some member economies and then opened to all. A-PPP mutual fund will be subscribed in proportions to be determined by sovereign wealth funds, pension funds and insurance funds. Following the principle of marketization, stakeholders will exercise decision-making authority in proportion to their capital contributions and a management team and professional investment manager will be hired.

A-PPP infrastructure mutual fund should be an important complement to the World Bank and Asia Development Bank in regional infrastructure finance, and should be built into a professional and permanent international financial institution.

Accelerating comprehensive connectivity and infrastructure development across the Asia-Pacific region has become a common goal of APEC members. At the 2013 APEC Economic Leaders' Meeting in Bali, APEC Leaders declared that APEC member economies would accelerate physical, institutional and people-to-people connectivity and encourage balanced, secure and inclusive growth as well as connect growth poles in the region, through means such as strengthening quality regional transportation networks, reducing transaction costs and making our region more competitive and cohesive. Some member economies in the Asia-Pacific region such as Australia, The United States, Japan, Chile and Hong Kong, China have rich experience with PPP. Based on existing achievements and modern financial mechanisms, the A-PPP model created through financial innovation and cooperation among the member economies is committed to enhancing governance in infrastructure investment.

In summary, based on APEC and its practices, we suggest three basic steps to be taken in the future: Firstly, to build the common understanding among the 21 APEC member economies of using PPP to promote infrastructure investment in the Asia-Pacific region; secondly, to identify A-PPP "best practices" through pilot projects; and finally, to adapt this common understanding and best practices to much wider applications.

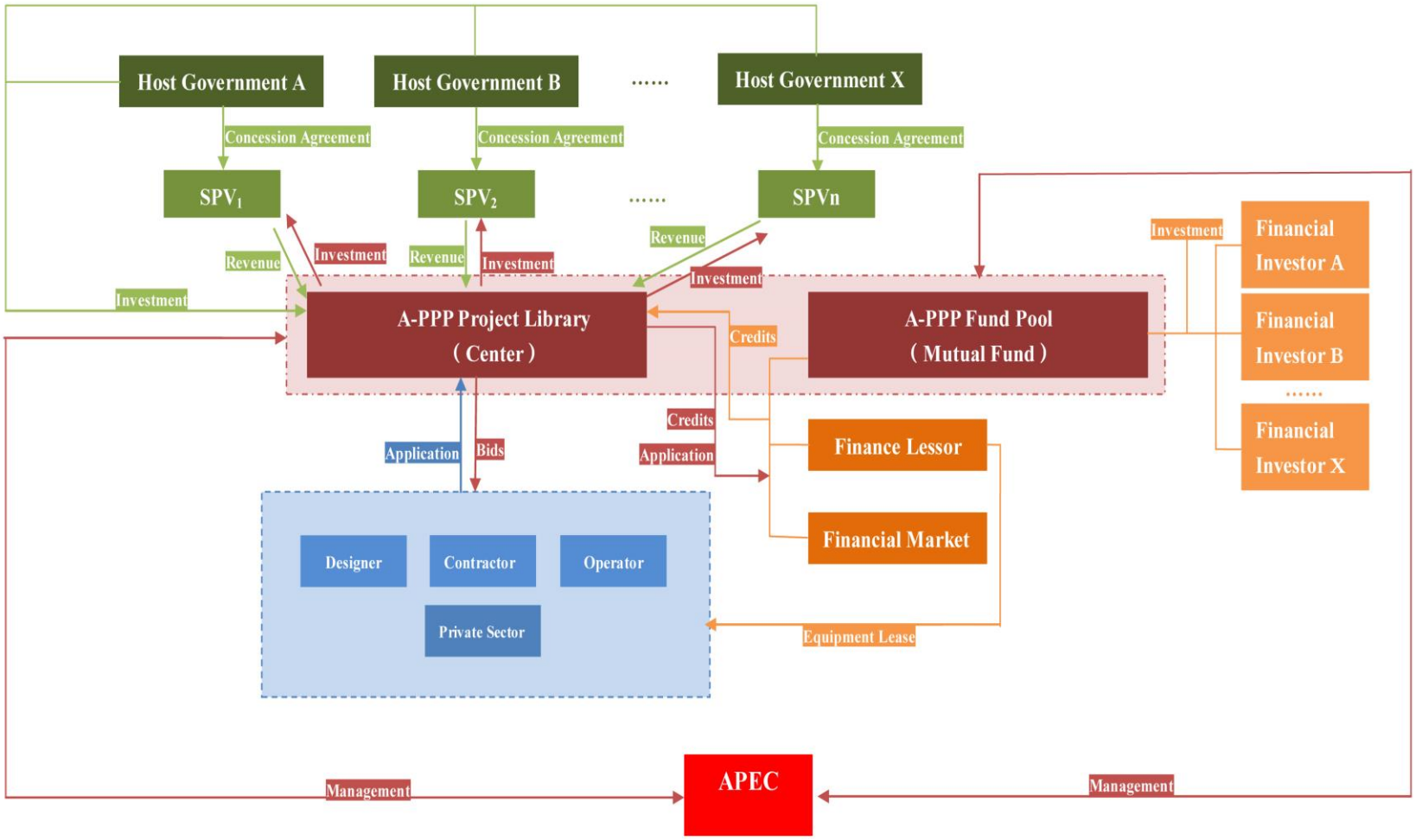



Figure 1：Proposed APEC-PPP Working Framework

**Table 1 Infrastructure disparity among APEC economies**

| APEC Economies | Per Capita GDP (2012，US$) | Infrastructure Score (2013) |
|---|---|---|
| Australia | 67,856 | 5.6 |
| Canada | 52,489 | 5.8 |
| Chile | 15,300 | 4.54 |
| China | 6,078 | 4.51 |
| Hong Kong, China | 36,590 | 6.74 |
| Indonesia | 3,591 | 4.17 |
| Japan | 46,530 | 6.03 |
| Republic of Korea | 22,590 | 5.85 |
| Malaysia | 10,387 | 5.19 |
| Mexico | 10,111 | 4.14 |
| New Zealand | 38,385 | 5.21 |
| Peru | 6,550 | 3.5 |
| The Philippines | 2,612 | 3.4 |
| Russia | 14,016 | 4.61 |
| Singapore | 53,516 | 6.41 |
| Chinese Taipei | 20,386 | 5.77 |
| Thailand | 5,390 | 4.53 |
| United States | 51,709 | 5.77 |
| Viet Nam | 1,753 | 3.69 |

Notes Per capita GDP data comes from IMF World Economic Outlook (WEO) database. The infrastructure scores are from The 2013-2014 Global Competitiveness Report by World Economic Forum; The statistics of Brunei and Papua New Guinea are not available.

**Table 2 Changes in ratios of financial deficit and government debt to GDP in some APEC economies**

| APEC Economies | Financial Surplus/GDP(%) | | | Total Government Debt /GDP(%) | | |
|---|---|---|---|---|---|---|
| | 2007 | 2012 | 2015 | 2007 | 2012 | 2015 |
| Australia | 1.5 | -3.7 | -1.9 | 9.7 | 27.2 | 31.8 |
| Canada | 1.5 | -3.4 | -2.0 | 66.5 | 88.1 | 86.6 |
| Chile | 7.9 | 0.7 | -0.9 | 3.9 | 12.0 | 13.5 |
| China | 0.9 | -2.2 | -1.6 | 19.6 | 26.1 | 18.7 |
| Hong Kong, China | 7.7 | 3.2 | 0.5 | 30.8 | 34.2 | 32.4 |
| Indonesia | -1.0 | -1.7 | -2.4 | 35.1 | 24.0 | 25.9 |
| Japan | -2.1 | -8.7 | -6.4 | 183.0 | 237.3 | 245.1 |
| Republic of Korea | 2.3 | 1.8 | 1.2 | 30.7 | 35.0 | 38.8 |
| Malaysia | -2.7 | -3.6 | -2.5 | 41.2 | 56.0 | 54.3 |
| Mexico | -1.2 | -3.7 | -3.6 | 37.6 | 43.3 | 48.4 |
| New Zealand | 3.4 | -1.6 | 1.1 | 17.2 | 37.5 | 32.1 |
| Peru | 3.2 | 2.1 | 0.2 | 30.4 | 20.5 | 16.6 |
| The Philippines | -0.3 | -0.7 | -0.8 | 44.6 | 40.6 | 32.8 |
| Russia | 6.8 | 0.4 | -0.8 | 8.5 | 12.7 | 12.8 |
| Singapore | 11.9 | 8.7 | 5.4 | 85.5 | 107.9 | 100.0 |
| Chinese Taipei | -2.1 | -4.2 | -2.7 | 33.3 | 40.9 | 40.1 |
| Thailand | 0.2 | -1.8 | -1.5 | 38.3 | 45.4 | 46.7 |
| United States | -4.0 | -9.7 | -5.6 | 64.0 | 102.4 | 105.7 |
| Viet Nam | -2.0 | -4.8 | -6.0 | 40.9 | 50.0 | 59.8 |

Data source: IMF WEO database. Projected information used for 2015. The statistics of Brunei and Papua New Guinea are not available.

**Table 3 A comparison of different economies in ratios of government revenue to GDP**

| APEC Economies | Government Revenue /GDP(%), 2012 |
|---|---|
| Australia | 33.1 |
| Canada | 41.5 |
| Chile | 24.4 |
| China | 22.6 |
| Hong Kong, China | 21.7 |
| Indonesia | 18.1 |
| Japan | 31.2 |
| Republic of Korea | 24.2 |
| Malaysia | 25.9 |
| Mexico | 23.5 |
| New Zealand | 34.8 |
| Peru | 21.7 |
| The Philippines | 18.2 |
| Russia | 37.9 |
| Singapore | 22.8 |
| Chinese Taipei | 16.5 |
| Thailand | 23.1 |
| United States | 29.0 |
| Viet Nam | 22.9 |

Data source: IMF WEO database. The statistics of Brunei and Papua New Guinea are not available

**Table 4. Total loans to Asia-Pacific region from World Bank and Asian Development Bank, 2007-2013 (Unit：Billion US$)**

| Financial Year | World Bank | Asian Development Bank | Total |
|---|---|---|---|
| 2007 | 4.0 | 10.6 | 14.6 |
| 2008 | 4.5 | 10.9 | 15.4 |
| 2009 | 8.2 | 15.4 | 23.6 |
| 2010 | 7.5 | 13.0 | 20.5 |
| 2011 | 8.0 | 13.1 | 21.1 |
| 2012 | 6.6 | 13.0 | 19.7 |
| 2013 | 6.2 | 14.4 | 20.6 |

Data sources: World Bank, Asian Development Bank.

Notes: Data comes from annual reports of the two institutions. World Bank data refers to the total aggregate amounts of all loans from the World Bank to East Asia and Pacific Region member economies. Asian Development Bank data refers to the total amount of loan and aid from ADB to its member economies (excluding amount from joint financiers).

**Table 5 Domestic saving rate in APEC economies**

| APEC Economies | Domestic Savings Rate/GDP | | |
|---|---|---|---|
| | 2007 | 2012 | 2015 |
| Australia | 21.9 | 25.0 | 23.5 |
| Canada | 24.7 | 21.2 | 21.8 |
| Chile | 24.7 | 21.6 | 20.7 |
| China | 51.8 | 51.0 | 49.8 |
| Hong Kong, China | 33.5 | 28.0 | 27.2 |
| Indonesia | 26.5 | 32.0 | 30.6 |
| Japan | 27.8 | 21.8 | 22.8 |
| Republic of Korea | 31.5 | 31.8 | 30.4 |
| Malaysia | 38.8 | 31.9 | 31.4 |
| Mexico | 22.0 | 22.0 | 20.4 |
| New Zealand | 16.5 | 16.1 | 17.9 |
| Peru | 24.3 | 23.2 | 24.3 |
| The Philippines | 22.1 | 21.3 | 23.5 |
| Russia | 30.9 | 26.6 | 25.8 |
| Singapore | 47.7 | 44.9 | 44.7 |
| Chinese Taipei | 31.7 | 30.1 | 30.3 |
| Thailand | 32.8 | 29.3 | 27.7 |
| United States | 17.3 | 16.3 | 17.9 |
| Viet Nam | 30.2 | 33.1 | 27.5 |
| World Average | 24.9 | 24.8 | 25.6 |

Data source: IMF WEO database. Projected data used for 2015. The statistics of Brunei and Papua New Guinea are not available

**Table 6 A comparison of several international infrastructure investment organizations**

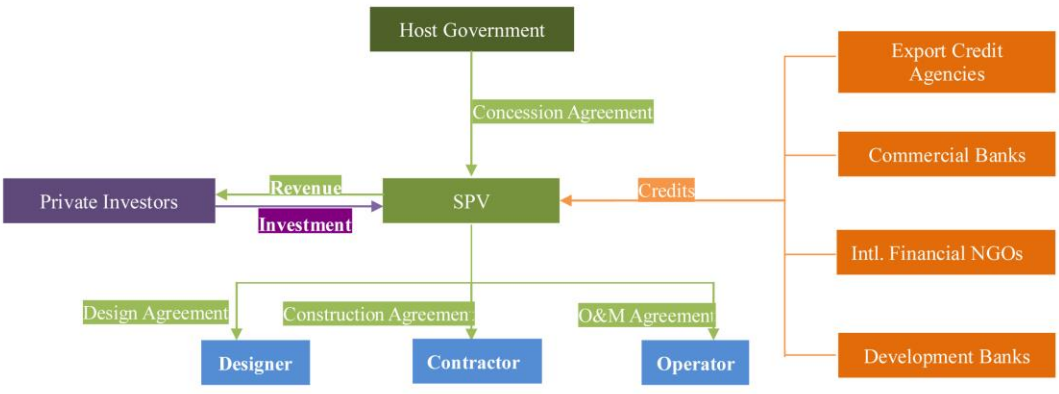
| | World Bank | Asian Development Bank | China-ASEAN Fund on Investment Cooperation |
|---|---|---|---|
| Initial Year | 1945 | 1966 | 2010 |
| The Nature of Organization | Global Multilateral Development Institution | Regional Multilateral Development Institution | Regional Equity Investment Fund |
| Total Scale | 223.2 billion US$ (capital stock subscription) | 162.8 billion US$ (capital stock subscription) | 10 billion US$ (Total scale planned) |
| Actual paid-in Capital | 40 billion US$ (paid-up stock and reserve) | 17.1 billion US$ (paid-up stock and reserve) | 1 billion US$ (initial paid-in capital) |
| Purpose | Achieve global economic development in the long run and reduce poverty | Help the developing members to reduce poverty and improve living standards | Provide financing support for economic cooperation between enterprises from China and ASEAN economies |
| Participating means | Low-interest loan, interest-free loan and grant | Loan, equity investment, technical assistance, etc. | Equity investment |
| Member Economies | 188 members | 48 members within Asia-Pacific region and 19 members beyond Asia-Pacific region | China and 10 ASEAN members |
| Investment Fields | Mostly project loans, used in many fields such as industry, agriculture, energy, transportation and education | Support members to develop the sectors including infrastructure, energy, environmental protection, education and health, etc. | Investment can produce infrastructure assets with long-term stable cash flows and natural resource projects |
| Object of Loan | Members | Developing member economies | ASEAN |
| Advantage | multiple investment projects; long loan term, low interest rate; relatively high project success rate, bringing project implementation experience to client economies | long loan term, low interest rate bring project implementation experience to client economies; relatively abundant funding sources as well as high joint financing rate | concentrated project investment directions<br>market operations, abundant funding sources ;<br>prompt project investment response |

## Appendix 1 Public-Private Partnership Introduction

From the APEC perspective, the concept of Public-Private Partnership (PPP) refers to the model in which the public sector works closely with a private sector entity on an infrastructure project, participating in the whole process of infrastructural development and operation. This is in contrast with a broader, more generalized concept of PPP that refers to all kinds of cooperation between public and private sectors, not necessarily engaging the public sector fully in actual development and operation of a specific project, which include BOT and its variants BOOT and TOT, etc. This study focuses on the narrower APEC definition of the PPP concept. Below we will describe what we call a "BOT" model led by the private sector, a so-called Developmental Financial model led by the public sector, as well as a third PPP model.

### The BOT model

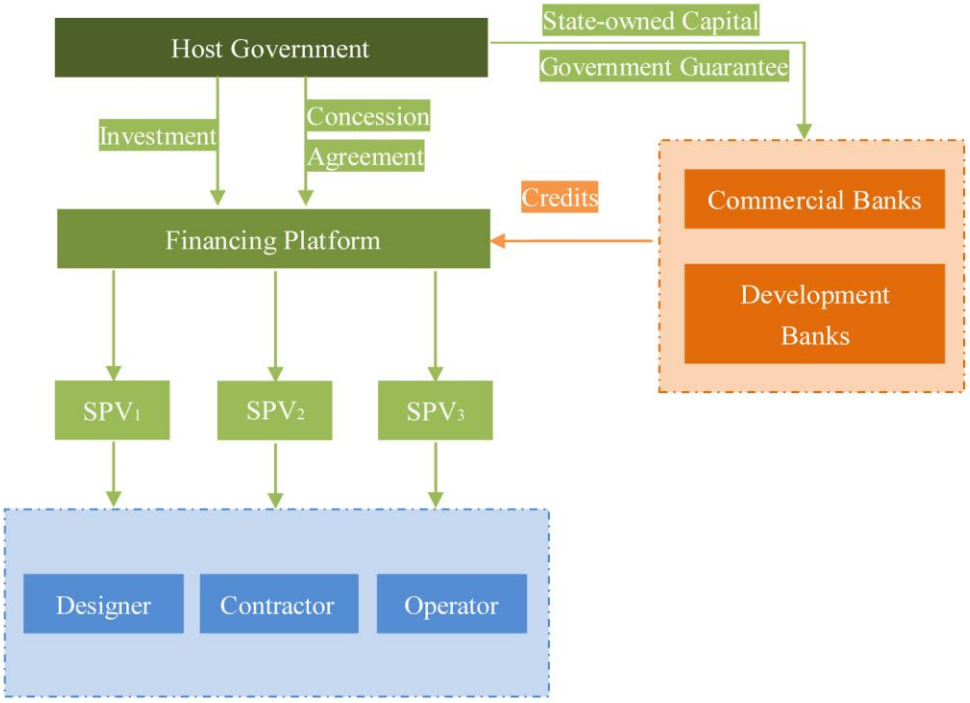
BOT is characterized by receipt by a private entity from the government of a "concession" agreement - granting some special - non-standard - rights to finance, design, construct, and operate a public facility. The government itself in this model is little involved in project operation (possible engaged more in project design) but will eventually reclaim the developed infrastructure. The private entity bears all the risks of project development and operation.




Appended figure 1：BOT model

**Developmental Financial Model (or government financing platform)**

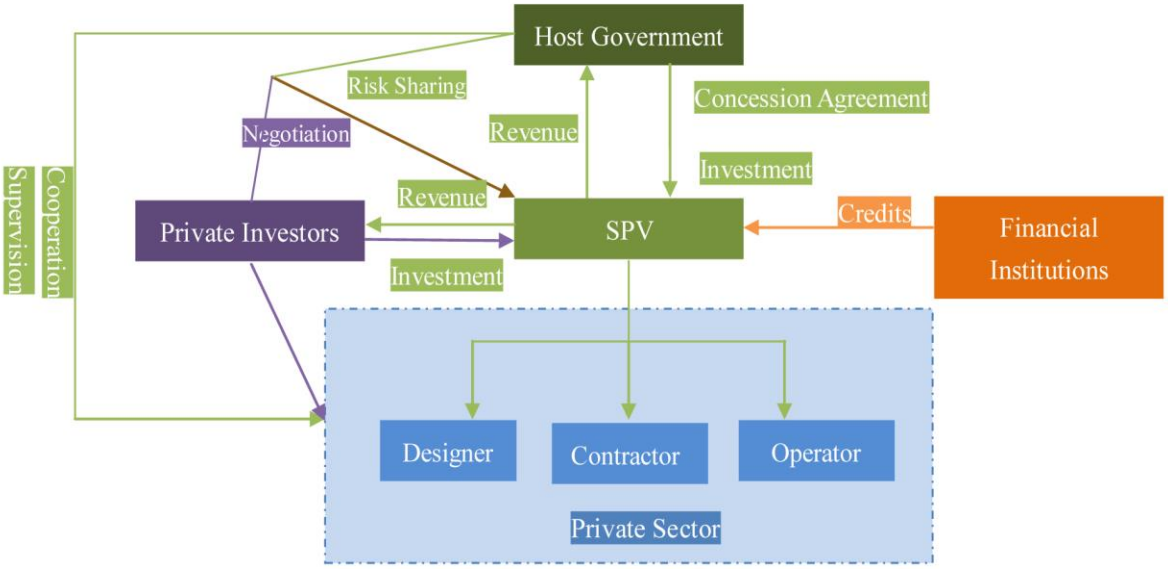
What APEC calls the "developmental" financial model (or "government financing platform") is by contrast mainly led by the government, with primary development financing coming from government finance or state-owned financial institutions. Project financing is established through government capital injection. The government basically takes all the risks.




Appended figure 2：Developmental financial model

**Classic PPP model**

In what APEC calls the "classic" PPP model, host government and private investors jointly establish a Special Purpose Vehicle (SPV), a formal Public-Private partnership or corporation, and seek financing from domestic private financial institutions for project development. The two parties collaborate on project development with potential capital inputs from the government, and with risks and profits typically shared by the two parties. Problems include difficulty in borrowing capital for project development, both in terms of capital shortages in the domestic private sector and often, projects' relatively low credit rating from the perspective of the financial system due to reliance on public-private SPV partnership.




Appended figure 3: Classic PPP model

## Appendix 2 PPP Operation

One element common across many PPP models is the Special Purpose Vehicle (SPV), also known as project company, an agreement creating a public-private partnership or corporation to manage a project. Creation of SPV or the project company is a decisive step in a PPP infrastructure project.

A successful SPC must solve two major issues: One is to design a capital structure and determine a logical financing scheme that satisfies both public and private parties concerning revenue sharing. The other is to determine an optimal risk-sharing mechanism, to ensure that private investors can accurately predict risk and maintain it at a relatively low level.

From the public sector perspective, key goals include:

-- a credible implementation schedule;

-- the verification that the private sector partner and SPV agreement itself comply with regulations;

-- the conformance of contracts to international best practices; and

-- the determination that project risk is acceptable, and comparable to those of similar projects.

PPP is arranged through an SPV, and a "concession" agreement typically signed between a government agency and the private sector partner for development, construction and operation of specific projects. As part of the concession, the government commits that an SPV joint partnership owns and operates the facility and collects revenue used to repay the financial and investment costs, maintain and operate the facility, and after that, to potentially receive profits.

The SPV is effectively a limited liability company jointly set up by an operating company and service company involved in project operation, and a third party engaged in investment. The SPV is responsible for construction and operation through capital borrowing, and the government generally will reach a direct agreement with the financial institution that provides the loans, which however does not typically provide government guarantees to the project.

Creation of the SPV allows "off-balance sheet financing" with debt raised by promoters only appearing in the SPV's balance sheet but not their own. Through the SPV, risks of participating parties are minimized, the project is assessed on its own merits and not on

investors' assets/debt situation. The liability of project sponsors is limited to the amount of capital they have invested, plus any obligations they have under the SPV contracts.

The SPV's capital structure reflects the cooperation between the public and private sectors. In a concession agreement, the public and private sectors determine their respective proportions of capital and jointly take charge of the project operating cycle. The private sector fully participates in design and development of the PPP project, reducing investment risks from information asymmetry. Although public investment cost is lower than in the private sector, private investment can reduce project development expenses by motivating technology transfer and introducing more efficient management and technology.

To carry out an infrastructure project, many participants need to sign a series of contracts "surrounding" the SPV and so forming a "contractual network." This network includes lenders, financial institutions, public authorities, export credit agencies, guarantors and suppliers. Agreements ancillary to the SPV agreement include: loan agreement, purchase agreement, supply agreement, concession agreement, and operation and maintenance agreement. As a new financing model, PPP has been embraced by both public and private sectors, however, financing schemes often become the focus of their negotiation. Determining the best financing arrangement scheme that satisfies both sides often becomes a bottleneck hampering application of the PPP model. The U.K was the first economy globally to use PPP model to develop infrastructure. According to Ahadzi and Bowles's study on British PPP projects, 98% of PPP projects took more time than non-PPP projects

Capital structure is a major issue in determining financing arrangements. Many factors influence capital structure. Issues to be considered include investment law and regulation, distribution of profit, amount of investment, concession period, discount rate and operating revenue and fees.

It is particularly important to assess the project risks carefully. One important SPV goal is to minimize project risks and devolve them to stakeholders best able to assess and manage those risks. With its ability to spread risk reasonably, the SPV's financing efficacy is increased, along with its ability to obtain financing at lower cost.

Many PPP projects have failed due to inability or unwillingness to identify legal and financial barriers SPVs face, which can lead to higher risk than expected. Therefore in establishing SPV, selecting experienced participants good at managing risks is a crucial

requirement, particularly for infrastructure projects needing long-term investment. Through a series of contract agreements with stakeholders, project risks can be assessed and more effectively managed.

**Research Team**

**Team Leader**

**CHEN Yulu** President, Renmin University of China
Committee member, the Monetary Policy Committee of the People's Bank of China

**Leading Authors**

**LIU Yuanchun** Director of Scientific Research Department and Professor of School of Economics, Renmin University of China

**XU Qinhua** Director of Center for International Energy Strategy Studies and Professor of School of International Studies, Renmin University of China

**FENG Junxin** Associate Professor of School of Economic, Renmin University of China

**LUO Yu** Associate Professor of School of Finance, Renmin University of China

**Members (Names listed in no particular order)**

**XU Jiabin** Professor of School of Business, Renmin University of China

**WANG Wen** Executive Vice Dean of Chongyang Insitute for Financial Studies, Renmin University of China

**SHENG Bin** Director of China APEC Institute of Nankai University and Professor of School of Economics, Nankai University of China

**HU Zhenhu** Asia-Pacific Finance and Development Center, the Ministry of Finance of China

**QIN Ping** Associate Professor of School of Economics, Renmin University of China

**SHI Huimin** Associate Professor of School of Economics, Renmin University of China

**LI Wei** Associate Professor of School of Economics, Renmin University of China

APEC Project: CTI 06 2014T

Produced by

Renmin University of China

For
Asia-Pacific Economic Cooperation Secretariat
35 Heng Mui Keng Terrace
Singapore 119616
Tel: (65) 68919 600
Fax: (65) 68919 690
Email: info@apec.org
Website: www.apec.org



#APEC-215-CT-01.1