



**Asia-Pacific
Economic Cooperation**

Study on Infrastructure Investment in the APEC Region

Committee on Trade and Investment

September 2016

APEC Project: CTI 02 2015S

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APEC#216-CT-01.10

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Executive Summary

(1) Introduction

The Asia-Pacific region is facing a growing demand for infrastructure investment. Under the circumstances, it has become an important issue to grope for an appropriate way of infrastructure investment with an eye to facilitating sustainable and quality development and growth and to share the results among economies within the APEC region.

APEC economies have discussed these issues for years, and the results have been embodied in the following two APEC documents: The first one is the “APEC Multi Year Plan on Infrastructure Development and Investment”, which was adopted in 2013 at the leader level of APEC economies. The second one is “APEC Connectivity Blueprint for 2015-2025” (hereinafter referred to as “the Blueprint”) adopted during the APEC Leaders’ Meeting in 2014, with a consensus reached to improve the connectivity within the APEC region in a more comprehensive manner including institutional arrangement and facilitation of people to people exchange in terms of the three pillar, i.e. “Physical Connectivity”, “Institutional Connectivity” and “People-to-people Connectivity”.

The pillar of the Physical Connectivity further was elaborated on as the important elements of cross-sectoral issues, and was identified as certain focal sectors of infrastructure development such as energy, ICT, and transport. With regard to the cross-sectoral issues, in addition to investment climate and public private partnerships (PPP), the elements of quality of infrastructure, rules and standards (good practices) relevant to infrastructure investment and people-centered investment were included in the Blueprint.

This study was started as an APEC project with a view to following up the above-mentioned issues relevant to the Physical Connectivity of the Blueprint. The study looks at (i) how the international and domestic (public and private) financial institutions employ these principles in their policies, and (ii) how these principles work in specific infrastructure projects based on the information provided by volunteered APEC economies and financial institutions.

Focusing on the issues included in the Blueprint, the study has been conducted through the following three steps:

- 1) Carrying out a survey on the relevant policies of international financial agencies, etc.;
- 2) Making a research on the specific infrastructure projects so as to show the actual application of the respective principles/policies included in the Blueprint; and
- 3) Summing up the findings and presenting conclusions based on results of the above study.

(2) Steps of the Study

With respect to the afore-mentioned three steps through which this study has been conducted, the methodology for each of the steps has been adopted as follows:

- 1) For Step 1), acquiring information relevant to the financing policy of international financial institutions on infrastructure projects from the source of published information;
- 2) For Step 2), identifying the policies closely related to the principles of “Quality of Infrastructure”, “Good Practice and Principles”, and “People-Centered Investment”, followed by the implementation of interview survey with the international financial institutions as targets;
- 3) For Step 3), picking out the principle of vital importance from among those included in the Blueprint upon receiving the information of good practice from respective APEC economies and international institutions, in light of the result of analysis on the background and reasons as to which of the key principles and its sub-principles and components has been most put into practice and how it has contributed to the success of a project as a key factor; adding description of items/principles identified also as the factors of success though not included in the Blueprint if there is any. In order to supplement the survey, efforts have been made to obtain relevant documents and published information to the extent possible, and analysis has been conducted on the basis of the available information.

(3) Results

In this study, special attention has been paid to the policy of procurement in light of the fact that it was set as a target in Annex B of “Report to Implement the APEC Connectivity Blueprint” to increase the quality of infrastructure in the Asia-Pacific region by increasing the number of APEC economies that adopt a comprehensive assessment method in proposal evaluation of infrastructure projects in the case of competitive bidding, where not only the purchase price but also key quality principles such as LCC including performance and durability, environmental impacts, safety and maintainability are considered.

The policy of safeguard (including environmental and social considerations, etc.) has also been regarded as important in that it was also set as a target to enhance good practices and principles such as on environmental and social considerations, transparency, sustainability, financial soundness and accountability in the document mentioned above.

The results of the survey conducted at Step 2) show that nearly all the surveyed institutions, both ODA and non-ODA, have guidelines related to environmental and social considerations, and a large proportion of the institutions have procurement guidelines and evaluations guidelines. It is noteworthy that, in many cases, these three kinds of guidelines include stipulations covering both the principle of “Quality of Infrastructure and that of “Good Practices and Principles”. Besides, it is found that most of the ODA institutions have guidelines/policies embracing the sub-principle of “LCC”, while some of the others deal with this issue in their internal regulations.

The results also suggest that the guidelines/policies adopted by ODA institutions in general have

stronger relationships with the principle of People-Centered Investment than that of the non-ODA. This phenomenon can be explained by the understanding that whereas the ODA institutions are accountable to the taxpayers, the non-ODA are accountable to the market and investors.

In order to verify how the key principles for infrastructure development work in specific infrastructure projects implemented by APEC economies and relevant institutions, a questionnaire was distributed to the APEC economies and relevant institutions, asking (i) to provide general information of recent successful case(s) on infrastructure development project, conducive to sustainable and quality of growth, and (ii) to describe to what extent an Principle(s) of the key principles ((1) quality of infrastructure, (2) good practices and principles, and (3) people-centered investment for infrastructure development) has been considered prior to the project implementation and thus these principles have contributed to the success as a critical factor. A case study was undertaken focusing on 7 out of the 13 cases, but a statistical analysis was conducted based on the total results of the 13 cases, and the results are summarized in the following section.

(4) Findings

As far as the above-mentioned 13 cases are concerned, the sub-principle of “Environmental and Social Considerations” is applied to all the cases, so its application rate is 100%. Next to this are the sub-principles of “LCC”, “Environmental Impacts”, and “Procurement Guidelines” with an application rate of 92%. The fourth and under with respective application rates are, “Financial Disciplines” (54%), “Safety Assurance” and “Social Resilience” (38%), “Accountability and Outreach” (31%), “Evaluation”, “Project Cycle Management (PCM)” and “Capacity Building and Technology Transfer” (23%), “Inspection and Observation of the Guidelines” (15%), and “Generation of Local Employment” (8%).

The results of the above-mentioned comparison contain the further facts as below:

- Generally speaking, those projects covering relatively more sub-principles can be found in a wide range of areas including power and transportation which serve as key sectors to facilitate economic growth and social sectors like water and health, and they also appear to be cross-income-level in that they are found in the projects implemented in various economies/countries ranging from low-income to more developed, transitional and developed economies/countries.
- Although many of the cases suggest that the sub-principle “LCC” has been applied to these infrastructure projects, some of the respondents did not mention it in their answer sheets because of its low degree of recognition and its similarity to “Environmental Impacts” in definition. It is necessary to further promote dissemination of proper understanding regarding this concept.
- The results show that many economies are embracing the idea of addressing environmental

impact in their actual policy-making regarding infrastructure development in response to the growing concern of the society over the issue, but it is not clear to what extent the issue of “Social Consideration” is addressed by the policies of respective economies.

- Although many of the international financial institution attach importance to the sub-principles of “Financial Discipline” and “Safety Assurance”, not more than half of the implementation agencies of APEC economies are actually applying these sub-principles to the infrastructure projects. Accordingly, it becomes necessary to enhance their application on the side of the infrastructure project implementing agencies from now.
- With regard to those sub-principles with low rate of application such as “Social Resilience”, “Evaluation”, “PCM”, “Capacity Building and Technology Transfer”, “Inspection and Observation of the Guideline” and “Generation of Local Employment”, as they are relatively new and important concepts, it is needed from now on to heighten the awareness of these concepts among various international financial institutions as well as the infrastructure project implementing agencies of the respective economies.

(5) Conclusions and Recommendations

1) Conclusions

- Many, though not all, of the principles and sub-principles incorporated in the Blueprint have been included in the rules (principles) of major international donors as reflected in their guidelines/policies, and the importance of the principles of infrastructure development for sustainable economic growth was reconfirmed from the practical perspective.
- With regard to the sub-Principle of “Generation of local employment”, it is applied in only one project in spite of the result of interview survey conducted in the previously mentioned Step 2) showing that many international institutions are making efforts to promote local employment. Whether this is because such kind of efforts have not made any significant progress in reality or monitoring of the progress is actually not conducted, it is still not clear about the reason based on the mere result of this study.
- With respect to the income level specific applicability of the principles, it can be said that the three principles under “Physical Connectivity” are applicable to all kinds of project implementing economies/countries regardless of income level as far as the cross-sectoral projects are concerned.
- Judging from the examples of good practice, it is appropriate to conclude that the existence of these rules has played a positive role in facilitating the development of infrastructure projects. This includes providing a desirable framework for better consensus building among interagency stakeholders and ensuring smooth and proper operation in the course of implementations such as safety measures, environmental considerations, and PDCA cycle, etc.

- In some of the examples of good practice provided by APEC economies, even though there might not be explicit stipulations about these rules, it is inferable that they should be subconsciously influencing the practices of the relevant government agencies and investors of infrastructure projects. This may be substantiated by the two examples provided by Peru and five examples by Hong Kong, China, where both the sub-principles of “LCC” and “Environmental Impacts” are applied, although it is not clear whether or not there are written rules relevant to these sub-principles.

2) Recommendations

- Recommendations for Both APEC and APEC Economies
 - A consistent effort in infrastructure development aiming at facilitating quality development and growth is necessary for promoting a robust, sustainable and well-balanced growth in the APEC region. In this regard, it is vital that the key principles stipulated in the Blueprint be put in the statutory form by APEC economies so as to become more effective in pushing forward infrastructure investment.
 - With regard to the sub-principle of “LCC”, although its actual rate of application is relatively high, taking into account its relatively low degree of recognition as compared with that of “Environmental Impacts” as well as the similarity between “LCC” and “Environmental Impacts” in definition, continue efforts to promote appropriate understanding of the definition of this concept are still needed.
 - Moreover, in respect to those sub-principles with low rate of application such as "Social Resilience", "Evaluation", "PCM", "Capacity Building and Technology Transfer", "Inspection and Observation of the Guideline" and "Generation of Local Employment" regarded as concepts relatively new, it is necessary to promote awareness of them among various international financial institutions as well as the infrastructure project implementing agencies of the respective economies.
- Recommendations for APEC
 - In order to facilitate quality development and growth, it is indispensable that certain rules/standards for desirable infrastructure development be prevailing not only in the public sectors but also in the private sectors. For this purpose, forceful measures are needed for the sharing of good practices/experiences and enhancing of consciousness in the APEC region. To this end, it is desirable to disseminate the rules/standards for infrastructure development through dialogue between public and private sectors.
 - It is necessary to promote awareness of the concepts of those sub-principles with low rate of application such as "Social Resilience", "Evaluation", "PCM", "Capacity Building and

Technology Transfer", "Inspection and Observation of the Guideline" and "Generation of Local Employment" regarded as relatively new among various international financial institutions as well as the infrastructure project implementing agencies of the respective economies.

- Recommendations for APEC Economies
 - It is essential for respective APEC economies to further enhance the application of key rules/standards for desirable infrastructure investment. For this reason, it would be necessary for the respective economies to make a review of the current state of application regarding the key rules/standards for infrastructure investment in terms of institutions and their operation. The review needs to be focused on the implementation of respective projects in addition to the policies of the lending institutions so as to reflect on the strategies to promote these key rules/standards.
 - The application of sub-principles "Financial Disciplines" and "Safety Assurance" needs to be strengthened on the side of the infrastructure project implementing agencies.

1. Introduction

(6) Background

The Asia-Pacific region is facing a growing demand for infrastructure investment. According to a study delivered by Asian Development Bank Institute (ADBI) in 2010, it is estimated that the developing economies/countries in Asia alone require financing of US\$776 billion per year for national (US\$747 billion) and regional (US\$29 billion) infrastructure during 2010-2020 to meet the growing demand for services¹. Under the circumstances in which various institutes are striving to respond to such a huge demand, it has become an important issue to grope for an appropriate way of infrastructure investment with an eye to facilitating sustainable and quality development and growth and to share the results among economies within the APEC region.

APEC economies have discussed these issues for years, and firstly Leaders level come up with the APEC Multi Year Plan on Infrastructure Development and Investment, which was adopted in 2013. In this document, “Leaders affirmed ‘well-designed, sustainable, and resilient infrastructure enhances economic growth, boosts productivity, and provides significant positive flow-on effects.’”

Subsequently during the APEC Leaders’ Meeting in 2014, “APEC Connectivity Blueprint for 2015-2025” (hereinafter referred to as “the Blueprint”) was adopted, with a consensus reached to improve the connectivity within the APEC region in a more comprehensive manner including institutional arrangement and facilitation of people to people exchange in terms of “three Pillars”, i.e. “Physical Connectivity”, “Institutional Connectivity” and “People-to-people Connectivity”. The pillar of “Physical Connectivity” was further elaborated on as the important elements of cross-sectoral issues, and was identified as certain focal sectors of infrastructure development such as energy, ICT, and transport. With regard to the cross-sectoral issues, in addition to investment climate and public private partnerships (PPP), the elements of quality of infrastructure, rules and standards (good practices) relevant to infrastructure investment and people-centered investment were included.

This study was started as an APEC project with a view to following up the above-mentioned issues relevant to the Blueprint. The study looks at (i) how the international and domestic (public and private) financial institutions employ these important elements of cross-sectional issues, in other words key principles (hereinafter referred to as “the principles”) in their policies, and (ii) how these principles work in specific infrastructure projects based on the information provided by volunteered APEC economies and financial institutions.

Focusing on the issues included in the Blueprint, the study has been conducted through the following three steps:

- 4) Carrying out a survey on the relevant policies of international financial agencies, etc.;

¹ ADBI Working Paper Series, “Estimating Demand for Infrastructure in Energy, is, Telecommunications, Water and Sanitation in Asia and the Pacific: 2010-2020” (No. 248, September 2010)

- 5) Making a research on the specific infrastructure projects so as to show the actual application of the respective principles; and
- 6) Summing up the findings and presenting conclusions based on results of the above study.

(2) Overview

For facilitating further understanding of the context in which the current study has been conducted, an overview of existing major documents relevant to the initiatives or studies concerning the thematic pillar of “Physical Connectivity” in the APEC region is given in Table 1. In essence, the importance of the quality infrastructure as an engine for sustainable economic growth has been confirmed by the APEC leaders in recent years. In 2013, the leaders addressed the impact of well designed, sustainable, and resilient infrastructure on economic growth and the economies are encouraged to work to foster a business friendly environment for infrastructure investment and to develop or further improve financing and funding environment. This was followed by the adoption of the Blueprint, which defines Physical Connectivity as one of the pillars of the Connectivity and identified the importance of comprehensive assessment methods that considers key quality principles, and application of good practices and people-centered investment. Conceptual consideration of the quality of infrastructure under “Physical Connectivity” was further evolved in “the APEC Guidebook on Quality of Infrastructure Development and Investment”, which defines the quality of infrastructure, i.e. Life Cycle Cost (LCC), Environmental and Other Impacts, and Safety Assurance.

Table 1 Overview of Existing Major Documents Relevant to the Thematic Pillar of “Physical Connectivity”

Title of Document	Place & Date of Issuance	Name of the Meeting	Submitter	Relevance to the Thematic Pillar of “Physical Connectivity”
APEC Framework on Connectivity (Annex A of The 21 st APEC Economic Leaders’ Declaration	Bali, Indonesia, Oct. 8, 2013	21 st APEC Economic Leader’s Meeting		<ul style="list-style-type: none"> ● Resolve to develop a blueprint to include, among others, the following measures on physical connectivity: to eliminate trade barriers impeding supply chain performance; help economies implement their trade facilitation and supply chain commitments through targeted, focused capacity-building; expand our trade routes and corridors, and <u>strengthen regional quality transportation networks, including roads, railroads, ports and airports, and to develop and improve well-designed, sustainable and resilient infrastructure</u> by implementing, at the outset, the multi-year plan on infrastructure development and investment in APEC and subsequently of broader infrastructure development. (Clause 7)
APEC Multi Year Plan on Infrastructure Development and Investment (MYPIDI)	Ningbo, China Feb. 23-24,2014	First Economic Committee Meeting	APEC Secretariat	<ul style="list-style-type: none"> ● Emphasized well-designed, sustainable, and resilient infrastructure enhances economic growth, boosts productivity, and provides significant positive flow-on effects including improved access to markets, job creation and economic growth across sectors. ● Committed to deliver the supportive institutional environment that is needed to maximize private sector involvement in infrastructure in the areas of fostering a business friendly environment for infrastructure investment and development, through a solid regulatory framework that minimizes uncertainty and maximizes transparency and predictability, and developing or further improve financing and funding environment to encourage long term investors. ● Reiterate the necessity to develop a unifying, forward-looking, and ambitious APEC Framework on Connectivity to deepen and broaden the region's connectivity around and across the Pacific Ocean and within APEC's archipelagic and continental regions. (Clause 6) ● Stress that <u>the development of physical infrastructure is recognized as a key pillar of the connectivity framework</u>, and that addressing impediments to cross-border transport infrastructure development is also a key element of APEC’s work on Supply Chain Connectivity. (Clause 6)
APEC Framework on Connectivity	Ningbo, China Feb. 25,2014	Senior Officials’ Meeting (SOM)	APEC Secretariat	<ul style="list-style-type: none"> ● Express the resolution to reinforce and expand the channels that connect the economies, including by <u>addressing the region’s underdeveloped infrastructures and their networks</u>, inefficient procedures, and hindrances to the mobility of the people and their institutional networks. (Clause 4) ● Emphasize the aspiration to reach a seamlessly and comprehensively connected and integrated Asia Pacific by realizing physical connectivity, institutional connectivity and people-to-people connectivity. (Clause 6) ● Announce the agreement to develop a blueprint which will include, among others, promotion of physical connectivity by eliminating trade barriers impeding supply chain performance, helping economies implement their trade facilitation and supply chain commitments through targeted, focused capacity-building, expanding trade routes and corridors, <u>strengthening regional quality transportation networks</u>, etc. (Clause 7)

APEC Guidebook on Quality of Infrastructure Development and Investment	Beijing, China Nov.5-6, 2014	Concluding Senior Officials' Meeting (CSOM)	Japan	<ul style="list-style-type: none"> ● <u>Define the quality of infrastructure projects as a composition of three key elements, i.e. Life Cycle Cost (LCC), Environmental and Other Impacts, and Safety Assurance.</u> (Section 1) ● <u>Propose the methodology to realize the quality of infrastructure projects</u> by following the proper process for developing infrastructure projects, conducting Value for Money (VFM) test for decision-making in procurement method, satisfying four basic concepts for procurement procedures, defining the service level for Infrastructure project, screening of prospective proponents and proposals, conducting appropriate contract management and ex-post evaluation. (Section 2)
APEC Connectivity Blueprint for 2015-2025 (Annex A of APEC Leaders' Declaration)	Beijing, China Nov. 7-8 2014	APEC Leaders' Meeting	China (Agreed by Leaders of APEC economies)	<ul style="list-style-type: none"> ● Under Physical Connectivity, with regard to cross-sectoral issues, focus on improving the investment climate, enhancing infrastructure financing through public private partnerships (PPP) and other means in APEC economies; <u>adopting comprehensive assessment methods that considers key quality elements in evaluation of infrastructure project proposals; and, enhancing the application of good practices and people-centered investment for planning and implementing infrastructure projects.</u> (Clause 13) ● <u>Develop, maintain and renew quality infrastructure,</u> including energy, ICT and transport infrastructure and <u>seek to increase the quality and sustainability of APEC transport networks;</u> increase broadband internet access; promote sustainable energy security; and build resiliency into the energy infrastructure. (Clause 17)
Report to Implement the APEC Connectivity Blueprint	Beijing, China Nov. 7-8 2014	26th APEC Ministerial Meeting	Policy Support Unit, APEC Secretariat	<ul style="list-style-type: none"> ● Mention <u>quality of infrastructure as one of the three cross-sectoral aspects of infrastructure that are important for business and trade,</u> the other two aspects being infrastructure financing through PPP and other important principles of infrastructure development. (Section C) ● Report that <u>Japan held a capacity building seminar on the quality of infrastructure to share further details of the principles with government officials and other stakeholders, and proposed to develop a guidebook to properly evaluate the quality of infrastructure to broaden the recognition on the importance of quality of infrastructure</u> that includes LCC, environmental performance, and safety, and assist APEC economies to plan and develop infrastructure from such a perspective. The efforts made by APEC economies in improving quality of infrastructure including sectors of transport, information and communications technology, and energy are also reported. (Annex A) ● Set it as <u>a target to increase the quality of infrastructure in the Asia-Pacific region by increasing the number of APEC economies that adopt a comprehensive assessment method in proposal evaluation of infrastructure projects in the case of competitive bidding,</u> which is the method of considering not only the purchase price, but also key quality elements such as LCC including performance and durability, environmental impacts, safety and maintainability. (Annex B) ● Point out that, <u>while infrastructure's sustainability is important for economic growth, developing economies with financial difficulties tend to pay attention to initial costs at procurement, which results in the fact they often end up introducing infrastructure with higher LCC, short-term durability, and/or high environmental burdens.</u> (Annex C) ● Reiterate the <u>agreement reached by APEC Leaders in Bali in 2013 on the importance of</u>

				<p><u>comprehensive and holistic considerations</u>, including the following principles: 1) to secure long-lasting asset value and stability of long-term cash flow of infrastructure projects; and 2) to improve bidding process of infrastructure projects that incorporate not only a procurement price but also key elements such as LCC including performance and durability, environmental impacts, safety including resilience to natural disasters, and maintainability. (Annex C)</p>
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Note: The underlined passages in boldface are considered relevant to the principles of quality infrastructure.

Source: APEC Website, "APEC Meeting Documents" (<http://mddb.apec.org/Pages/default.aspx>)

2. Steps of the Study

(1) Introduction

With respect to the afore-mentioned three steps through which this study has been conducted, the methodology for each of the steps has been adopted as follows:

- 4) For Step 1), acquiring information relevant to the financing policy of international financial institutions on infrastructure projects from the source of published information;
- 5) For Step 2), identifying the policies closely related to the principles of “Quality of Infrastructure”, “Good Practice and Principles”, and “People-Centered Investment”, followed by the implementation of interview survey with the international financial institutions as targets; and
- 6) For Step 3), picking out the principle of vital importance from among those included in the Blueprint upon receiving the information of good practice from respective APEC economies and international institutions, in light of the result of analysis on the background and reasons as to which of the principles and its sub-principles and components has been most put into practice and how it has contributed to the success of a project as a key factor; adding description of items/principles identified also as the factors of success though not included in the Blueprint if there is any.² In order to supplement the survey, efforts have been made to obtain relevant documents and published information to the extent possible, and analysis has been conducted on the basis of the available information.

(2) Definition of the Principles and its Sub-Principles

The three principles for infrastructure development under Physical Connectivity (Quality of Infrastructure, Good Practices and Principles and People-Centered Investment) are drawn from the Report to Implement the APEC Connectivity Blueprint, and its sub-principles are selected in the current study based on the Report.

(i) Quality of Infrastructure

According to the Report to Implement the APEC Connectivity Blueprint, Quality of Infrastructure includes life cycle cost including performance and durability, environmental impacts, safety and maintainability, all of which were derived from the considerations with which APEC Multi-Year Plan on Infrastructure Development and Investment recognized importance of planning such as long-lasting asset value, stability of long term cash flow and lifecycle cost of infrastructures.

² Questionnaires were distributed to respective APEC economies and relevant institutions to request for provision of information of projects conducted recent years and identified as examples of good practice which have contributed to sustainable and quality development and growth. In response to the request, many economies and institutions have actively provided us with relevant information.

In this study, therefore, the sub-principles have been selected as Life Cycle Cost (LCC), Environmental Impacts, and Safety Assurance. The components under each sub-principle are selected as follows:

(Life Cycle Cost)

- a. Reduction, management of risk, and opportunity cost of delay of construction
- b. Daily operation cost
- c. Maintainability
- d. Performance and durability

(Environmental Impacts)

- a. Applying superior environmental technologies

(Safety Assurance)

- a. Guidelines for safety and measures taken in the case of accident
- b. For labors
- c. For neighborhood and region
- d. For users
- e. Resilience to natural disasters

(ii) Good Practices and Principles

Criteria for good practices and principles in infrastructure financing may vary, depending upon the nature of the institutions (OECD member or non-member, development or non-development institutions); however, the Paris Declaration of Aid Effectiveness, adopted by 100 developed and developing economies/countries in 2005, became a common agenda for improving assistance. According to the Report to Implement the APEC Connectivity Blueprint, “Good Practices and Principles” include environmental and social considerations, transparency, sustainability, financial soundness and accountability. In this study, therefore, the sub-principles have been selected as Environmental and Social Considerations, Procurement Guidelines, Financial Discipline, Evaluation, and Inspection/Observation of the Guidelines. The components under each sub-principle are selected as follows:

(Environmental and Social Considerations)

- a. Availability of environmental and social guidelines
- b. Permits and approvals
- c. Anti-pollution measures
- d. Natural environment
- e. Social environment
- f. Issues during construction
- g. Public comments/consultations
- h. Compensation
- i. Monitoring
- j. Dispute settlement (including Objection Procedures)

(Procurement Guidelines)

- a. Accessibility (including brochures and pamphlets)
- b. International Competitive Bidding, Local Component,

(Financial Discipline)

- a. Debt Sustainability Analysis and Creditworthiness (reference to IMF DSA)
- b. Economic Internal Rate of Return (EIRR) or Financial Internal Rate of Return (FIRR)
- c. Lending conditions (interest rates, repayment period, and grace period)

(Evaluation)

- a. Ex-ante Evaluation, refers to the evaluation conducted before the project.
- b. Implementation Stage Evaluation, refers to the evaluation conducted during the implementation stage.
- c. Ex-post Evaluation, refers to the evaluation conducted several years after the completion of the project, which is different from the Project/Implementation Completion Report.

(Inspection/Observation of the Guidelines)

- a. Mechanism for inspection (including third party monitoring system)
- b. Fraud
- c. Conflict of interest

(iii) People-Centered Investment

The Report to Implement the APEC Connectivity Blueprint elaborates that “People-Centered Investment” emphasizes the importance of having as many local people as possible enjoy the economic benefit through creating local employment for example, enhancing social resilience to economic fluctuations, climate change and natural disasters, and advancing capacity building among local people. In this study, therefore, the Sub-principles have been selected as Project Cycle Management, Generation of local employment, Capacity building and technology transfer, Social resilience, and Accountability and outreach. The components under each sub-principle are selected as follows:

(Project Cycle Management)

- a. Participation of project beneficiaries in the project preparation, implementation and evaluation
- b. Management, evaluation and monitoring methods in the project cycle

(Generation of Local Employment)

- a. Employment of local workers during the construction period
- b. Generation of local employment after the construction

(Capacity Building and Technology Transfer)

- a. Capacity building and technology transfer

(Social Resilience)

- a. Economic fluctuations
- b. Climate change and natural disasters (including improvement of the environment)

(Accountability and Outreach)

- a. Public Disclosure Policy
- b. CSO engagement

(3) Target Institutions

15 institutions were selected as the targets for interview survey in the above-mentioned Step 2 of this study for being able to meet one of the two requirements, i.e., a) Finance and/or development institutions, which are denoted as institutions with concessional financing as a means of development assistance, with track record in infrastructure investment, b) Non-development institutions, which are denoted as institutions to finance private-sector investment, influential for setting standards and guidelines for infrastructure financing. These institutions include 7 multilateral financial institutions, 7 bilateral development finance institutions and 1 non-financial institution.

The multilateral financial institutions are the International Bank of Reconstruction and Development (IBRD) and the International Development Association (IDA)³, the International Finance Corporation (IFC), the Asian Development Bank (ADB), the European Bank for Reconstruction and Development (EBRD), the Inter-American Development Bank (IDB), the Inter-American Investment Corporation (IIC), and the African Development Bank (AfDB).

The bilateral institutions are Japan International Cooperation Agency (JICA), Agence Française pour le Développement (AFD), Japan Bank for International Cooperation (JBIC), the United States Export-Import Bank (USEXIM), China Development Bank (CDB), the Export-Import Bank of China (CEXIM), and Economic Development Cooperation Fund (EDCF)⁴.

The non-financial institution is the Equator Principle (EP), a network of member banks, mostly private financial institutions sharing the common “principles” for projects.

The above-mentioned a) institutions can be further classified into the type of finance/development institutions and non-development institutions (or ODA institutions and non-ODA institutions) as indicated in Table 2.

Table 2 Target Institutions for Interview Survey in Step 2 of This Study

Types of Institution	Multilateral	Bilateral
Finance/Development Institutions	IBRD/IDA, ADB, EBRD, IDB, AfDB	JICA, AFD, CDB, EDCF
Non-Development Institutions (Private Sector Focus)	IFC, IIC	JBIC, USEXIM, CEXIM
Non-Financial Institutions	EP	-

With regard to the questionnaire (Appendix 2) survey conducted in Step 3 to acquire information

³ IBRD, IDA, and IFC are counted as one institution, i.e., the World Bank.

⁴ An institution managed by the Export-Import Bank of Korea (KEXIM) in charge of development loans.

with examples of good practice, a total of 13 cases were received from 3 APEC economies and 3 international institutions. The economies and institutions that responded to the questionnaire survey are listed in Table 3 underneath.

Table 3 APEC Economies and International Institutions Responding to the Questionnaire Survey

Economies/ Institutions	List
APEC Economies	USA (1), Peru (2), Hong Kong, China (HKC) (5),
International Institutions	ADB (1), EBRD (3), JICA (1)

Note: Noted in each bracket is the number of cases of good practice provided by respective target institutions.

3. Results

(1) Details of Information Sought by This Study

This study is aimed to examine whether the importance of the principles for infrastructure development have been well recognized by the target institutions, and if it is the case, how the principles have been realized in the course of development and implementation of respective institutions' operational policies and guidelines, with a view to serving as a reference in exploring desirable infrastructure investment in terms of sustainable and quality development and growth. To this end, the three key questions listed in Table 4 were used to request for answers in the interview survey conducted in Step 2, with further details of information supposed to be covered by the guidelines relevant to the principles and sub-principles, which are mentioned in the Chapter 2 (2) and also summarized with its components in Table 5, as reference for interviewees to give relevant answers to the questions.

Regarding the survey conducted in Step 3), the respective economies/institutions have been requested to provide information of projects conducted recent years, which are recognized as good practices, and the number of economies and institutions that responded to the questionnaires distributed is only 3 for the former and 3 for the latter, and the total number of cases of good practice provided by the target institutions is not more than 13.

Table 4 Questions Requesting for Answers in the Interview Survey

No.	Question
1	Do you have any guidelines and/or criteria for evaluation in area of (1) quality of infrastructure, (2) good practices and principles, and (3) people-centered investment? Please see the list below (Table 5) with suggested areas of evaluation in each category. Please suggest any other indicators or categories that are referred to in your institution.
2	If yes, are these guidelines or criteria available to the public? Please provide us with links to website or copy of the guidelines.
3	To what extent are these guidelines observed in practice? Are there any ways that ensure the enforcement of the guidelines?

Table 5 Scope of the Principles under “Physical Connectivity”

Principles	Sub-Principles	Components (Further Details)
Quality of Infrastructure	Life Cycle Cost (LCC)	<ul style="list-style-type: none"> ● Reduction, management of risk, and opportunity cost of delay of construction ● Daily operation cost ● Maintainability ● Performance and durability
	Environmental Impacts	<ul style="list-style-type: none"> ● Application of superior environmental technologies
	Safety Assurance	<ul style="list-style-type: none"> ● Guidelines for safety and measures taken in case of accident ● For labors ● For neighborhood and region ● For users ● Resilience to natural disasters
Good Practices and Principles	Environmental and Social Considerations	<ul style="list-style-type: none"> ● Availability of environmental and social guidelines ● Permits and approvals ● Anti-pollution measures ● Natural environment ● Social environment

		<ul style="list-style-type: none"> ● Issues during construction ● Public comments/consultations ● Compensation ● Monitoring ● Dispute settlement (including objection procedures)
	Procurement Guidelines	<ul style="list-style-type: none"> ● Accessibility (including brochures and pamphlets) ● International competitive bidding (ICB)
	Financial Discipline	<ul style="list-style-type: none"> ● Debt sustainability analysis and creditworthiness (reference to IMF DSA) ● Economic Internal Return (EIRR) or Financial Internal Return (FIRR) ● Lending conditions (interest rates, repayment period, and grace period)
	Evaluation	<ul style="list-style-type: none"> ● Ex-ante evaluation (conducted before the project) ● Implementation stage evaluation ● Ex-post evaluation (conducted several years after the completion of the project)
	Inspection/observation of the Guidelines	<ul style="list-style-type: none"> ● Mechanism for inspection (including third party monitoring system) ● Monitoring of fraud ● Monitoring of conflict of interest
People-Centered Investment	Project Cycle Management (PCM)	<ul style="list-style-type: none"> ● Participation of project beneficiaries in the project preparation, implementation and evaluation ● Management, evaluation and monitoring methods in the project cycle
	Generation of Local Employment	<ul style="list-style-type: none"> ● Employment of local workers during the construction period ● Generation of local employment after the construction
	Capacity Building and Technology Transfer	
	Social Resilience	<ul style="list-style-type: none"> ● Counter-measures against economic fluctuations ● Counter-measures against climate change and natural disasters (including improvement of the environment)
	Accountability and Outreach	<ul style="list-style-type: none"> ● Public disclosure policy ● CSO engagement

(2) Policies/Guidelines of Special Importance

In this study, special attention has been paid to the policy of procurement in light of the fact that it was set as a target in Annex B of “The Report to Implement the APEC Connectivity Blueprint” to increase the quality of infrastructure in the Asia-Pacific region by increasing the number of APEC economies that adopt a comprehensive assessment method in proposal evaluation of infrastructure projects in the case of competitive bidding, where not only the purchase price but also the principles such as LCC including performance and durability, environmental impacts, safety and maintainability are considered.⁵

The policy of safeguard (including environmental and social considerations, etc.) has also been regarded as important in that it was also set as a target to enhance “Good Practices and Principles” such as on environmental and social considerations, transparency, sustainability, financial soundness and accountability in the document mentioned above.

⁵ In the Blueprint, “we will focus on ...adopting comprehensive assessment methods that considers key quality elements in evaluation of infrastructure project proposals” was mentioned.

(3) Overview of the Relevant Policies/Guidelines Formulated by Respective Target Institutions

An outline of the publicly available policies/guidelines formulated by major target institutions is given in Table 6 based on the information acquired through the survey in Step 1 and Step 2.

Table 6 Outline of Policies/Guidelines Formulated by Respective Target Institutions

Type	Institutions	Outline of Policies/Guidelines
ODA Institutions	IBRD/IDA (World Bank)	<p>World Bank’s operations and activities are basically governed by its <u>Operational Policies (OP)</u> and <u>Bank Procedures (BP)</u>, which are supplemented by procurement guidelines and other additional guidelines. All the principles and most of the sub-principles under the pillar of “Physical Connectivity” are dealt with by these policies and guidelines except for the sub-principle of “Environmental Impacts” under “Quality of Infrastructure” and “Social Resilience” under “People-Centered Investment”.</p> <ul style="list-style-type: none"> ● <u>Operational Policies (OP) and Bank Procedures (BP)</u> The documents cover the following two types of policies: >Fiduciary policies, including rules governing financial management, procurement, and disbursement; >Safeguard policies, including environmental assessments and policies designed to prevent unintended adverse effects on third parties and the environment, addressing issues of natural habitats, pest management, cultural property, involuntary resettlement, indigenous people, safety of dams, projects on international waterways and projects in disputed areas. ● <u>Procurement Framework and Regulations for Projects</u> The Bank introduced new procurement framework and regulations for projects in July, 2016. Under the framework there are four key features as follows: >Analysis of needs and risks of a project through a Project Procurement Strategy for Development (PPSD) enables the borrower to have a strategy on how best to engage with bidder. >Value for Money has been introduced as a core procurement principle in all procurements financed by the World Bank. This means a shift in focus from the lowest evaluated compliant bid to bids that provide the best overall value for money, taking into account quality, cost, and other factors as needed. >Introduction of a standstill period - a pause between identifying who should win the contract and actually awarding them the contract in order to resolve procurement-related complaints. >More involvement of the contract management of procurements with high value and high risk to ensure the best possible outcomes and that problems are resolved quickly. The following guidance supplement the regulations cover all the major fields of procurement Guidelines under the Principle of “Good Practices and Principles ” Project Procurement Strategy for Development (2016), Procurement Hands-on Expanded Implementation Support (2016), Procurement in Situations of Urgent Need of Assistance or Capacity Constraints (2016), Procurement Noncompliance in IPF Operations (2016), Thresholds for Procurement Approaches and Methods by Country (2016), Procurement Post Review, Independent Procurement Review (2016), and Integrated Fiduciary Reviews (2016).
	IDB	<p>Inter-American Development Bank (IDB) has formulated operational policies to govern its general and sectoral operations, and environmental and social safeguard policies to address the environmental and social issues in particular. All the principles and most of the sub-principles under the pillar of “Physical Connectivity” are dealt with by these policies-guidelines except for the sub-Principle of “Environmental Impacts” and “Safety Assurance” under “Quality of Infrastructure” and “Generation of Local Employment” and “Capacity Building and Technology Transfer” under “People-Centered Investment”.</p> <ul style="list-style-type: none"> ● <u>General Operational Policies – Policies for the Procurement of Goods and Works financed by the Inter-American Development Bank (2011)</u> The policies aim to grant transparency, competition, equality of opportunities, and the principles of economy, efficiency and integrity in the procurement of IDB-financed operations involving procurement processes for goods, works and services. The sub-Principle of “LCC” under “Quality of Infrastructure” is covered here. ● Various Environmental Safeguard Policies The following policies/guidelines cover all the major fields of environmental and social considerations under the Principle of “Good Practices and Principles ”: <u>Environmental</u>

		<p><u>Safeguards Policies and Guidelines – Environment and Safeguards Compliance Policy (2006), Implementation Guidelines for the Environment and Safeguards Compliance Policy (2007), Environmental Safeguards Policies and Guidelines – Greenhouse Gas Emissions (GHG) – Coal Fired Power Plants Guidelines (2009), Environmental Safeguards Policies and Guidelines – Greenhouse Gas Emissions (GHG) – Cement Manufacturing Plant Guidelines (2010), Environmental Safeguards Policies and Guidelines – Greenhouse Gas Emissions (GHG) – Landfill Guidelines (2010), Environmental Safeguards Policies and Guidelines – Greenhouse Gas Emissions (GHG) – Liquid and Gaseous Fossil Fuel Power Plant (2012), and Environmental Safeguards Policies and Guidelines – Greenhouse Gas Emissions (GHG) – Disaster Risk Management Policy (2008).</u></p> <ul style="list-style-type: none"> ● Two Social Safeguards Policies/Guidelines <p>The following two policies/guidelines are not only relevant to the issue of environmental and social considerations, but also relevant to the issue of project cycle management (PCM) under the Principle of “People-Centered Investment”: <u>Social Safeguards Policies and Guidelines – Operational Policy on Indigenous Peoples (2006)</u> and <u>Social Safeguards Policies and Guidelines – Involuntary Resettlement Policy (1999).</u></p>
	ADB	<p>Asian Development Bank (ADB) has been one of the leading multilateral development banks in financing regional physical infrastructure projects. By adopting and implementing various guidelines/policies, ADB is now standing at the forefront of international regulatory cooperation. The following major guidelines/policies cover all the principles of “Physical Connectivity”:</p> <ul style="list-style-type: none"> ● <u>Guidelines for Economic Analysis of Project (1997)</u> The document covers issues of maintainability, sustainability, and durability of projects, which are relevant to the Principle of “Quality of Infrastructure”. ● <u>Safeguard Policy Statement (2009)</u> It covers three key safeguard areas: Environmental Safeguards, Involuntary Resettlement Safeguards, and Indigenous Peoples Safeguards, associated with the issue of safety assurance under “Quality of Infrastructure” and the issue of environmental and social considerations under “Good Practices and Principles”. ● <u>Procurement Guidelines (2015)</u> It deals with the issue of procurement, supplemented by several other documents including <u>User’s Guide to Procurement of Works: Standard Bidding Document (2014)</u>, etc. ● <u>Guidelines for Preparing Performance Evaluation Reports for Public Sector Operations (2013)</u> It addresses the sub-principles of “Financial Discipline” and “Evaluation” under the Principle of “Good Practices and Principles”, touching on the issue of EIRR calculation, etc., ● <u>Guidelines for Prepare Performance Evaluation Reports on Non-sovereign Operations (2013)</u> It deals with the same issues as the above-mentioned, though focusing on sectors of sub-sovereign, state-owned enterprise, other PPP entity or private sector entity. ● <u>The Safeguard Policy Statement of the ADB Operations Manual (2013)</u> The document stipulates that the project team should ensure participation of vulnerable groups in consultations, and also explains management, evaluation and monitoring issues. ● <u>Implementing Small Projects with Community Participation of the ADB Project Administration Instructions (2007)</u> It states that the contractors should employ members of the local community. ● <u>Technical Assistance Performance Report (2003,2009) and Technical Assistance Completion Report (2011) of the ADB Project Administration Instruction</u> Both of the documents deal with the issue of capacity building. ● <u>Public Communication Policy (2011)</u> The document touches on the issue of public disclosure of ADB’s information.
	EBRD	<p>The European Bank for Reconstruction and Development (EBRD) is an international financial institution founded in 1991. As a multilateral developmental investment bank, the EBRD uses investment as a tool to build market economies. Initially focused on the countries of the former Eastern Bloc it expanded to support development from central Europe to central Asia and north of Africa. Despite its public sector shareholders, it focuses in the development of the private sector. Currently, EBRD has transport, municipal, and environment sector strategies that define EBRD’s vision of achieving secure, reliable and sustainable infrastructure which embody market principles, balance economic, environmental and social needs and are responsive to the requirements of industry and of the public.</p> <ul style="list-style-type: none"> ● <u>Environmental and Social Policy (2014)</u>

		<p>The policy covers the issues of safety assurance, environmental and social considerations, and inspection/observation of the guidelines.</p> <ul style="list-style-type: none"> ● <u>Procurement Policies and Rules</u> (2014, revised) <p>It deals with the issue of procurement including selection of contractors for projects of different scales.</p> <ul style="list-style-type: none"> ● <u>Evaluation Policy</u> (2013) <p>It establishes the scope and objectives of evaluation for projects at different stages.</p> <ul style="list-style-type: none"> ● <u>Enforcement Policy and Procedures</u> (2014) <p>It serves as guidelines to set out the Bank’s policy and procedures for handling allegations of fraud, corruption, collusion or coercion in relation to activities and projects financed from the Bank’s resources.</p> <ul style="list-style-type: none"> ● <u>Project Complaint Mechanism</u> (2014) <p>The mechanism ensures the Bank’s accountability already established to assess and review complaints about the Bank-financed projects.</p> <ul style="list-style-type: none"> ● Policies Relevant to Accountability and Outreach <p>The documents of <u>Domiciliation of EBRD Clients</u> (2013), <u>Ethnic Minorities and the EBRD</u> (1993), and <u>Public Information Policy</u> (2014) are formulated to strengthen the Bank’s accountability, protection of ethnic minority rights and commitment to enhance the transparency of its activities and promote good governance.</p>
	AfDB	<p>African Development Bank (AfDB) observes institutions with the OECD guidelines and IBRD/IFC guidelines as key references. Its publicly available guidelines/policies cover most of the principles under “Physical Connectivity” except the Principle “Quality of Infrastructure” and part of the Principle “Good Practices and Principles” which are reflected mainly in its internal criteria.</p> <ul style="list-style-type: none"> ● <u>Environmental and Social Assessment Procedures (ESAP) for AfDB Public Sector Operations</u> (2001) <p>Its main purpose is to improve decision-making and project results in order to ensure the environmental and social sustainability of the Bank-financed projects, plans and programs. The observation of it is considered the precondition for loan approval.</p> <ul style="list-style-type: none"> ● <u>AfDB’s Integrated Safeguards System (ISS)– Policy Statement and Operational Safeguards</u> (2013) <p>The document establishes the guiding principles for an ISS that consolidates and revamps the Bank’s existing environmental and social safeguards.</p> <ul style="list-style-type: none"> ● <u>Operational Safeguard (OS)</u> <p>It complements the ESAP and governs the issues of environmental and social assessment, involuntary resettlement, land acquisition, population displacement and compensation, biodiversity and ecosystem etc.</p> <ul style="list-style-type: none"> ● <u>Rules and Procedures for Procurement of Goods and Works</u> (2012) <p>They govern the procurement of goods, works and services required for the project either solely or partly financed by AfDB and the compliance of them is a condition for loan approval.</p> <ul style="list-style-type: none"> ● <u>Handbook on Stakeholder Consultation and Participation in AfDB Operation</u> (2009) <p>The Handbook functions as operational guidelines for all the Bank staff and Regional Member Countries (RMC) to follow in project cycle management. The method of Objectives-Oriented Project Planning (ZOPP) developed by German Technical Corporation (GTZ, currently GTI) is adopted in the Handbook, which also covers the issues of generation of local employment, capacity building and technology transfer and social resilience.</p> <ul style="list-style-type: none"> ● Policies Relevant to Accountability and Outreach <p>Three policies, i.e. <u>Bank Group Policy on Disclosure and Access to Information</u> (2012), <u>Guidance Note – Addressing Sector Governance and Corruption Risk in Infrastructure Projects</u> (2009), and <u>Whistle Blowing and Complaints Handling policy</u> (2007) deal with issue of accountability in terms of public disclosure and good governance.</p>
	JICA	<p>Japan International Cooperation Agency (JICA) was set up in 1974 mainly for the purpose of providing technical assistance at the time, and was reorganized into the new JICA in 2008 with the additional function of ODA loan assistance, which was separated from JBIC. Currently, the guidelines/policies adopted by JICA for infrastructure projects are mainly reflected in the following documents which cover nearly all the principles and sub-principles under “Physical Connectivity”:</p> <ul style="list-style-type: none"> ● <u>New JICA Guidelines for Project Evaluation</u> (2010) <p>The document covers issues of LCC, evaluation at various stages, project cycle management, generation of local employment, capacity building and technology transfer, and social resilience, thus touching on all the principles and most of the sub-principles</p>

		<p>under “Physical Connectivity”.</p> <ul style="list-style-type: none"> ● <u>Guidelines for Environmental and Social Considerations</u> (2010) The issues of environmental impacts and safety measures relevant to the Principle of “Quality of Infrastructure” and the issues of social and environmental considerations, and procurement guidelines relevant to the Principle of “Good Practices and Principles” are covered in this document with binding effect. ● <u>Guidelines for Procurement under Japanese ODA Loans</u> (2012) The document governs the issue of procurement of projects financed by Japanese ODA loans also with binding effect. ● Three Supplementary Documents Relevant to Procurement The documents of <u>Evaluation Guide for Prequalification and Bidding under JBIC ODA Loans</u> (2010), <u>Standard Bidding Documents</u> (2012) and <u>Check List for One-sided Contracts</u> (2011) serve as supplementary documents to the above-mentioned guidelines.
	AFD	<p>Agence Française de Développement (AFD), as a public development-finance institution established for the mission of executing the French government’s development aid policies, has worked for seventy years to alleviate poverty and foster sustainable development in the developing world and the French Overseas Provinces. Nearly 30% of the AFD projects are relevant to infrastructure. The guidelines/policies indicated below cover all the principles under “Physical Connectivity” though issues of Financial Discipline and most of the issues under the Principle of “People-Centered Investment” are governed by internal criteria and thus are not publicly available.</p> <ul style="list-style-type: none"> ● <u>AFD’s Evaluation Policy</u> (2013) The document covers issues related to LCC and evaluation, and is also designed to serve as a framework for AFD’s evaluation procedures and any methodological documents that may specify how to implement them. ● <u>Guidelines for the Procurement of AFD-Financed Contracts in Foreign Countries</u> (2014) The purpose of the guidelines is to specify AFD’s requirements for procurement, to render them binding upon the Beneficiary and to specify the scope of control that AFD undertakes on AFD-financed contracts. ● <u>AFD and PROPARCO General Policy on Combating Corruption, Fraud, Anti-Competitive Practices, Money Laundering and Terrorist Financing</u> (2013) This general policy is intended to avoid unwittingly engaging in any of these unlawful practices. AFD and Economic Cooperation Promotion and Participation Association (PROPARCO) have adopted the present general policy, comprising operating procedures and check points to be verified or applied by head office and network employees. ● <u>AFD Group Policy on Non-Cooperative Jurisdictions</u> (2012) Together with the above-mentioned policy, this policy is relevant to the issue of Inspection and Observation of the Guidelines. ● <u>Social Responsibility Policy</u> (2015) This policy reflects the sub-Principle of Accountability and Outreach.
	KEXIM/EDCF	<p>The Export-Import Bank of Korea (KEXIM), as an export credit agency, provides the clients with services including export loans, trade finance, guarantee programs, import credit, and information services. KEXIM also operates the Economic Development Cooperation Fund (EDCF) for ODA operations, though the parent organization itself operates the Non-ODA business. The efforts KEXIM (EDCF) has made are well aligned with the Blueprint as well as other development banks. The following guidelines/policies cover all the principles under “Physical Connectivity” except the sub-principles of LCC, Environmental Impacts, and Financial Discipline. Besides, the sub-principles of Social Resilience and Accountability and Outreach are covered by internal documents.</p> <ul style="list-style-type: none"> ● <u>Standard Bidding Documents under the EDCF Loan: Procurement of Works</u> This document covers the sub-principles of Safety Assurance, Procurement Guidelines, Inspection/ Observation of the Guidelines, and Generation of Local Employment. ● <u>EDCF Safeguard: Policy and Operations Manual (Draft)</u> The sub-principle of Environmental and Social Considerations is touched on in this document. ● <u>EDCF Evaluation Manual</u> It deals with the issue of Evaluation including ex-ante evaluation, mid-term review, completion evaluation and ex-post evaluation, supplemented by two internal guidelines. ● <u>EDCF Activities and Programs – Economic Development Cooperation Fund: Korea’s Main Foreign Aid Facility</u> The document explains the process of Project Cycle Management (PCM), which is supplemented further by two internal documents: Administrative Regulation and

		Administrative Guidelines.
	CDB	<p>China Development Bank (CDB) is founded in 1994 as China’s policy finance institution aimed at providing medium- to long-term financing facilities that assist the development of a robust economy and a healthy, prosperous community. Its global business cooperation activities were started in 2005, followed by its reorganization into a joint-stock corporation as a major step taken by the Chinese government to reform the policy institutions. The following guidelines/policies are not only applied to CDB’s global business cooperation activities, but also to its domestic activities, covering all the three elements under “Physical Connectivity” except the sub-elements of LCC, Procurement Guidelines, Financial Discipline, Inspection / Observation of the Guidelines, PCM, Capacity Building/Technology Transfer, and Accountability and Outreach:</p> <ul style="list-style-type: none"> ● <u>Regulations of CDB Loan Project Management (1997)</u> It deals with the issue of evaluation in terms of evaluation of the previous phase, process evaluation, and comprehensive evaluation of a project. ● <u>Green credit Guidelines (2012)</u> The document was issued by China Banking Regulatory Commission (CBRC), requiring all the banking financial institutions in China including CDB to promote green credit from a strategic perspective, increase support for green economy, low-carbon economy and circular economy, prevent environmental and social risks, better their environmental and social performance, as well as optimize credit structures, improve service levels and promote the transformation of the mode of development, thus relevant to the sub-principles of Environmental Impacts, Safety Assurance and Environmental and Social Considerations. ● <u>Joint Commitment of Chinese Banking to Green Credit (2013)</u> It is a joint document signed by 29 banking financial institutions in China including CDB, vowing to stick to the principles stipulated in the above-mentioned Green Guidelines. ● <u>Handbook on the Special Loan for the Development of African SMEs</u> It covers the issues of Generation of Local Employment and Social Resilience under the Principle of “People-Centered Investment”.
Non-ODA Institutions	IFC	<p>International Finance Corporation (IFC), a member of the World Bank Group, is the largest global development institution focus exclusively on the private sector in developing countries. Its Sustainability Framework, adopted in 2006 and updated in 2012, mainly consists of the Policy on Environmental and Social Sustainability, Performance Standards on Environmental and Social Sustainability, and Access to Information Policy, which is reinforced by other guidelines/policies to fulfill its commitment to sustainable development. This Framework and supplementary guidelines/policies cover all the elements and most of the sub-principles under “Physical Connectivity” except that of LCC, Financial Discipline (only internal criteria), Evaluation, Generation of Local Employment and Capacity Building and Technology Transfer. These are important elements of the project evaluation by IFC board and part of the development impact indicators that IFC defines and monitors for all projects.</p> <ul style="list-style-type: none"> ● <u>Performance Standards on Environmental and Social Sustainability (2012)</u> The document covers issues including environmental and social risks and impacts. Labor and working conditions, resource efficiency and pollution prevention, community health, safety and security, land acquisition and involuntary resettlement, biodiversity conservation, indigenous peoples, and cultural heritage. ● <u>Policy on Environmental and Social Sustainability (2012)</u> The policy describes IFC’s commitments, roles and responsibilities related to environmental and social sustainability. ● <u>Other Four Documents Relevant to the Issue of Environmental and Social Considerations</u> In addition to the above-mentioned two major documents, the following documents are also adopted to serve as supplementary guidelines/policies: <u>World Bank Group Environmental, Health, and Safety (EHS) General Guidelines (2007)</u> along with the <u>Industry Sector Guidelines in more than sixty sectors, Environmental and Social Review Procedures (ESRP) Manual (2011)</u>, and <u>Guidance Notes on Environmental and Social Sustainability (2012)</u>, <u>Interpretation Note on Financial Intermediaries (2012)</u>. ● <u>Access to Information Policy (2012)</u> This policy reflects the various capacities in which IFC operates, the nature of the information that it receives and prepares in connection with the diverse activities, and the level of disclosure applicable to different types of information. <p>The Inter-American Investment Corporation (IIC) promotes the development of the</p>

IIC	<p>private sector in Latin America and the Caribbean, with special emphasis on small and medium-sized enterprises (SMEs). IIC has established appropriate guidelines and procedures to facilitate the efficient processing of all transactions and the administration of institutional affairs. Its guidelines in the three thematic pillars overlap, with special emphasis on the environmental and social considerations. The following guidelines/policies cover all the principles under “Physical Connectivity” though the sub-principles of LCC, Capacity Building and Technology Transfer are not touched on, and Financial Discipline, Evaluation, Inspection/ Observation of the Guidelines, PCM, and Generation of Local Employment are reflected only in internal criteria:</p> <ul style="list-style-type: none"> ● <u>ICC Environmental and Social Sustainability Policy</u> (2013) As a major comprehensive policy, it covers issues of environmental impacts, safety assurance, environmental and social considerations, social resilience and accountability. ● <u>Applicable Principles and Standards for Procurement</u> This is a set of policies governing the issue of procurement of goods and services with ICC funds, including <u>The Code of Ethics for ICC Employees</u> (2014), <u>The IIC Disclosure of Information Policy</u> (2005) and <u>The ICC Operating Policy</u> (2008). ● <u>Good Practice Standards</u> It describes the evaluation methodology that constitutes part of the sub-principle of PCM.
EP	<p>The Equator Principles (EP) is a risk management framework adopted mostly by private financial institutions for determining, assessing and managing environmental and social risk in projects and is primarily intended to provide a minimum standard for due diligence to support responsible risk decision-making. This framework applies globally to all industry sectors and to four financial products: a) project finance advisory services, b) project finance, c) project-related corporate loans, and d) bridge loans.</p> <p>The Equator Principles Financial Institutions (EPFIs) commit to implementing the EP in their internal environmental and social policies, procedures and standards for financing projects and will not provide project finance or project related corporate loans to project where the client will not, or is unable to, comply with the EP.</p> <p>In respect to the thematic pillar of “Physical Connectivity”, the EP covers all the principles with the exception of the sub-principles of LCC, procurement guidelines, financial discipline, evaluation, inspection and observation of guidelines, generation of local employment, capacity building and technology transfer and social resilience. In short, due to the characteristic of EP as a set of the principles applied to private financial institutions, it emphasizes more on the aspect of addressing the risks that may threaten the financial institutions themselves and the market than on that of the issues of development assistance.</p>
JBIC	<p>Japan Bank for International Cooperation (JBIC) was established in 2012 and 2016 in accordance with the Japan Bank for International Cooperation Act (JBIC ACT). Since then it has focused exclusively on the non-ODA loans and financial services. Although JBIC has robust guidelines assessing financial viability of a project (especially in a case of project finance), most of them except some are internal guidelines and references, which are not publicly available. This can be explained by its commitment of keeping confidential the commercial information.</p> <p>Nevertheless, as JBIC also observes the principle of information disclosure, it encourages the borrowers and related parties to submit the environment-related documents subject to disclosure without inclusion of commercially confidential information. Its major guidelines/policies are as follows:</p> <ul style="list-style-type: none"> ● <u>OECD Common Approaches on the Environment</u> The Common Approaches adopted by OECD in 2007 was revised in 2012 based on the agreement reached among the Export Credit Group of OECD including Japan. JBIC adheres to the guidelines of this document as well as the other mentioned below in addressing the issues of Environmental Impacts and Environmental and Social Considerations. ● <u>Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations</u> (2015) Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations (2015), which is publicly available, covers all the issues relevant to Environmental Impacts and Environmental and Social Considerations. ● <u>JBIC Mid-term Business Plan</u> Under the Mid-term Business Plan, JBIC sets the KPIs related to the projects that deploy advanced technologies and promote the preservation of the global environment. <p>The publicly available guidelines/policies of Export-Import Bank of the United States</p>

USEXIM	<p>(USEXIM) cover the principles of “Quality of Infrastructure” and “Good Practices and Principles”, leaving out that of “People-Centered Investment”. Besides, sub-principle of LCC is also not covered in the existing guidelines/policies, while the sub-principles of Procurement Guidelines and Accountability and Outreach are reflected in the internal regulations. The major guidelines/policies are as follows:</p> <ul style="list-style-type: none"> ● <u>OECD Common Approaches on the Environment</u> The Common Approaches adopted by OECD in 2007 was revised in 2012 based on the agreement reached among the Export Credit Group of OECD including the U.S.A. USEXIM adheres to the guidelines of this document as well as the others mentioned below in addressing the issues of Environmental Impacts and Environmental and Social Considerations. ● <u>Environmental and Social Due Diligence Procedures and Guidelines (2013)</u> This document deals with the issues of Environmental Impacts and Environmental and Social Considerations, which is reinforced by the Common Approaches on the Environment and the environmental guidelines applicable to the Equator Principles Lending Institutions it adopted ● <u>Environmental and Social Procedures and Guidelines (2010)</u> This document deals with the issues of Safety Assurance, Environmental and Social Considerations, and Evaluation, while the IFC Performance Standards are used as reference guidelines. ● <u>General Bank Policies</u> These cover the issues relevant to environment and anti-bribery measures, etc. ● <u>Credit Standards</u> This document includes medium-term credit standards and short-term credit standards, relevant to the issue of Financial Discipline.
CEXIM	<p>As one of China’s policy finance institution, CEXIM (The Export-Import Bank of China) was founded to facilitate the export and import of Chinese mechanical and electronic products, complete sets of equipment and new- and high-tech products, assist Chinese companies with comparative advantages in their offshore project contracting and outbound investment, and promote international economic cooperation and trade. With regard to infrastructure investment, its publicly available guidelines/policies cover all the principles under “Physical Connectivity” except the sub-principles of LCC, Procurement Guidelines, Financial Discipline, PCM, Generation of Local Employment, Capacity Building/Technology Transfer, and Accountability and Outreach:</p> <ul style="list-style-type: none"> ● <u>Measures for the Management of Project Review of China Exim Bank (2000)</u> It deals with the issue of evaluation in terms of ex-ante evaluation, implementation stage evaluation, and ex-post evaluation of a project. ● <u>Green Credit Guidelines (2012)</u> As mentioned in the case of CDB, the document is relevant to the sub-principles of Environmental Impacts, Safety Assurance and Environmental and Social Considerations. ● <u>Joint Commitment of Chinese Banking to Green Credit (2013)</u> Like CDB, CEXIM is also included in the 29 banking financial institutions in China that signed this document, vowing to stick to the principles stipulated in the above-mentioned Green Guidelines. ● <u>Guidelines for Environmental and Social Assessment of CEXIM’s Loan Projects (2007)</u> The guidelines cover most of the issues mentioned in the sub-Principle of Environmental and Social Considerations. ● <u>Framework of Environmental Impact Assessment and Framework of Resettlement Policy (2011)</u> Environmental and Social Considerations ● <u>Operation Manual for Anti-Money Laundering</u> It covers measures of institution development, data reporting and training in response to the issuance of <u>Anti-Money Laundering Regulations of Financial Institutions</u> by the People’s Bank of China (Central Bank) in 2003, which is relevant to the sub-principle of Inspection/Observation of the Guidelines.

The results of the above survey show that nearly all the surveyed institutions, both ODA and non-ODA, have guidelines related to environmental and social considerations, and a large proportion of the institutions have procurement guidelines and evaluations guidelines. It is noteworthy that, in

many cases, these three kinds of guidelines include stipulations covering both the principle of “Quality of Infrastructure and that of “Good Practices and Principles”. Besides, it is found that most of the ODA institutions such as IBRD/IDA, IDB, ADB, JICA and AFD have guidelines/policies embracing the sub-principle of “LCC”, while some of the others deal with this issue in their internal regulations.

The results also suggest that the guidelines/policies adopted by ODA institutions in general have stronger relationships with the principle of “People-Centered Investment” than that of the non-ODA institutions. It can be found from the Safeguard Policies of IBRD/IDA, Social Safeguards Policies/Guidelines of IDB, Safeguard Policy Statement and Public Communication Policy of ADB, Project Complaint Mechanism, Handbook on Stakeholders Consultation and Participation in AfDB Operation, New JICA Guidelines for Project Evaluation and so on, where the issues of PCM, Generation of Local Employment and accountability and outreach are dealt with. On the other hand, only a few of non-ODA institutions have internalized the Principle. However, these institutions also pay careful attention to local and internal NGOs as part of social and environmental consideration, by inviting them to project preparation meetings and donors conferences, because they are sensitive to the reputation of the market and in the international financial community. This phenomenon can be explained by the understanding that whereas the ODA institutions are accountable to the taxpayers, the non-ODA institutions are accountable to the market and investors.

(4) Comparison with Cases of Good Practice

The passages below are devoted to seeing how the principles for infrastructure development work in specific infrastructure projects provided by APEC economies and relevant institutions. A questionnaire (Appendix 2) was distributed to the APEC economies, asking (i) to provide general information of recent successful case(s) on infrastructure development project, conducive to sustainable and quality of growth, and (ii) to describe to what extent an Principle(s) of the principles ((1) Quality of Infrastructure, (2) Good Practices and Principles, and (3) People-centered Investment for infrastructure development) has been considered prior to the project implementation and thus the principles have contributed to the success as a critical factor. Although only 7 out of 13 cases are dealt with here due to space constraint, information of the other cases can be acquired from the table of Appendix 1.

With regard to the 13 cases, 2 of them are provided by multilateral assistance agencies, and 1 is from bilateral assistance agency. As far as the composition by sector is concerned, the 13 cases consist of 4 in transportation, 4 in disaster prevention, 2 in environment/energy conservation, 2 in public health and 1 in water supply. Moreover, when looking at the economies/countries where the projects of good practice have been implemented from the perspective of income level (according to the classification by the World Bank), out of the 13 cases, 1 is implemented in low-income country

(India), 3 in more developed economies (China and Peru), 2 in transitional countries (Turkey and Romania), and 7 in developed economies/countries (USA and Hong Kong, China (HKC)).

1) Case 1: “Provision of Sanitation Services in the Southern Districts of Lima” (Peru)

- Outline of the Project

This was a PPP project awarded to the Technical Company SA Water Desalination by PROINVERSION, the Private Investment Promotion Agency of Peru, on December 17, 2013. The project aims at the design, financing, construction, operation and maintenance of the sanitary infrastructure, improvement and expansion of the drinking water supply service, as well as the sewerage service, treatment and final disposal of wastewater in the southern districts of Lima, within the scope of SEDAPAL project for the next twenty-five years.

SEDAPAL (the Potable Water and Sewerage of Lima), as a Peruvian state-owned company created in 1981, started the “Drinking Water Supply through Water Points for Southern Summer Resorts - District of Lurín” project in 2013, which was financed jointly by SEDAPAL, the District Municipalities and the Ministry of Housing, Construction and Sanitation. The PPP project was implemented as part of the SEDAPAL project.

The project's area consists of four districts in the south of Lima, located near the sandy beaches: Punta Hermosa, Punta Negra, San Bartolo, and Santa Maria del Mar, with a population of 100 000 inhabitants in summer station. The estimated cost of investment is US\$ 100 million.

- Application of the Principles under “Physical Connectivity” in the Project

The project is regarded as a good infrastructure investment case in terms of “Quality of Infrastructure” (LCC, and environmental impacts) and “Good Practices and Principles” (environmental and social considerations, procurement guidelines, and financial disciplines) as described below:

With regard to the principle of “Quality of Infrastructure”, superior environmental technologies, such as a desalination plant for drinking water and a wastewater treatment plant with Membrane bioreactor (MBR) activated sludge, were introduced in the project. The effluents of these plants, brine and wastewater treated, will be mixed to achieve a positive effect of reducing the concentration of brine and giving an osmotic shock to the microbiological charge, and thus the effluents will be diluted before discharge to the outfall and the ocean without negative effects on the environment. This desalination plant will be the largest among the plants using the same technology in Peru (400 Lts/s) and the first example of providing drinking water services through PPP. Adoption of these technologies are not only in line with the sub-principle of “environmental impacts”, but also with that of “LCC” in that the superior technology will eventually reduce the life cycle cost of the drinking water provision and wastewater treatment for the economy/ as a whole.

In respect to the principle of “Good Practices and Principles”, the following examples of application are worthy of mentioning: an Environmental Examination Report was prepared by the concessionaire, and was approved by the Ministry of Housing, the sectorial environmental authority of Peru; an international competitive bidding (ICB) was conducted by PROINVERSION using a standard contract for sanitation project in BOT, with the financial arrangement and payment conditions taking into account the payback of initial investment and cost of operation and maintenance (O&M); the self-sustainability of the project is ensured by the properly set fee structure accepted by all the users in Lima.

- Factors for the Success of the Project

In light of the principles incorporated in this project, the sub-principle of “Environmental Impacts” under the principle of “Quality of Infrastructure”, and that of “Environmental and Social Considerations”, “Procurement Guidelines” and “Financial Discipline” under the principle of “Good Practices and Principles” are identified as factors for the success of the project.

2) Case 2: “General San Martin Port of Pisco” (Peru)

- Outline of the Project

The project involves the design, financing, construction, operation and maintenance for a period of 30 years, of the General San Martin Port Terminal, located in the Department of Ica, province of Pisco, Paracas district, about 280 Km south of the port of Callao.

The port was built in 1969 and features a 700-meter long marginal pier with four mooring docks. It is naturally protected from breakers and enjoys a balmy climate nearly all year round. However, the infrastructure was affected as a result of the earthquake of 2007 in Pisco. Also, the water supply and energy was not available from the public utility, thus requiring the utilization of wells and powered water pumps.

The project was awarded on April 30th 2014 to the Paracas Consortium who submitted the lowest Standard Rate Index (0.79348) for users of the port and a greater amount of complementary investment (US \$80 million). The investment cost was estimated to be around US\$ 102.4 million (VAT excluded).

- Application of the Principles under “Physical Connectivity” in the Project

Like Case 1, this project is also deemed as an example of good practice in infrastructure investment in that it has incorporated the major sub-principles under the principles of “Quality of Infrastructure” (environmental impacts) and “Good Practices and Principles” (environmental and social considerations, procurement guidelines, and financial disciplines).

First of all, to prevent possible negative environmental impacts in light of the fact that the site of

the project is near the Paracas National Reserve and the seismic prone area, the project was designed with careful structural calculations (according to engineering regulation), which was regarded as technologically advanced, and continuous supervision during the construction phase was required.

Secondly, to practice the principle (sub-principle) of “Environmental and Social Considerations” during the bidding process, as part of the proposal, the bidders were obliged to submit the Environmental Control Plan for both the period of construction and operation of the port terminal. In addition, PROINVERSION hired a specialized company to do the preliminary environmental assessment of the project in order to identify potential environmental impacts and corresponding measures of mitigation for the environment of the protected areas and nearby locations. Moreover, during the private investment promotion of the project, PROINVERSION conducted workshops to disseminate information of the project and to request for public comments from and consultations with the key stakeholders.

Thirdly, as a practice of procurement via ICB, the bidding terms and draft of contract were published in order to receive comments, suggestions and opinions from state entities and potential investors. The concession contract included technical, environmental and port operation regulation, governing not only the construction phase, but also the operation and maintenance phase, and the obligations of the Concessionaire were also included.

Finally, with regard to the issue of financial discipline, the financial requirements to be fulfilled by the potential investors were stipulated in the bidding terms, including providing evidence of possessing a minimum net equity of US\$ 70,000,000. Besides, the concession contract allowed the development of non-port services by the Concessionaire, which is expected to potentially contribute to the promotion of other economic activities such as tourism in the Paracas Bay and meanwhile to the financial sustainability of the project.

- Factors for the Success of the Project

To sum up the passage above, the factors for the success of this project are exactly the same as that of the Case 1, i.e. the sub-principle of “LCC” and “Environmental Impacts” under the principle of “Quality of Infrastructure”, and that of “Environmental and Social Considerations”, “Procurement Guidelines” and “Financial Discipline” under the principle of “Good Practices and Principles”.

3) Case 3: “T-Park” (Hong Kong, China (HKC))

- Outline of the Project

The project is designed to tackle the unique waste challenges in Hong Kong, China in a sustainable manner. To embrace the concept of “waste-to-energy”, the self-sustained sludge treatment facility combines a variety of advanced technologies into a single complex including sludge incineration, power generation, seawater desalination and wastewater treatment, plus other

environmental, educational and recreational components. The project cost approximately HK\$5 billion (US\$645 million) to design and construct from October 2010 to March 2015.

- Application of the Principles under “Physical Connectivity” in the Project

The reasons for this project to be recommended as an example of good practice in infrastructure investment is that it reflects the major sub-principles under the principles of “Quality of Infrastructure” (environmental impacts) and “Good Practices and Principles” (environmental and social considerations, and procurement guidelines).

In this project, several superior environment technologies were introduced, including wastewater treatment, seawater desalination, sludge incineration, flue gas treatment, etc. With the adoption of these technologies, the project was expected to contribute to the improvement of environment through utilization of the quality infrastructure.

In addition, efforts were made in this project to conform to the global good practices and principles with respect to environmental and social considerations in terms of anti-pollution measures, natural environment protection measures, air environmental monitoring, smart community construction, public education facilities development, etc.

Besides, the procurement adopted a Design, Build and Operate approach under which the Contractor was required to design, build and operate the T-Park for 15 years after completion of works in accordance with the Contract conditions and performance requirements. The procurement process followed the established and stringent rules of the Hong Kong, China SAR Government.

- Factors for the Success of the Project

Descriptions in the above passage boil down to the conclusion that the factors for the success of this project include the sub-principle of “Environmental Impacts” under the Principle of “Quality of Infrastructure” and that of “Environmental and Social Considerations” under the principle of “Good Practices and Principles” Regarding the former, the superior environment technologies adopted in this project will result in not only the reduction of wastes but also the generation of energy, thus contribute to the sustainable development of Hong Kong, China by way of environment conservation and energy generation/saving. As for the latter, the all-round and integrated measures taken to fulfill the requirements of environmental and social considerations promise a positive impact on the formation of a circulating society.

4) Case 4: “Design and Construction of Tsuen Wan Drainage Tunnel” (Hong Kong, China (HKC))

- Outline of the Project

The project was designed to ease the burden on the existing drainage systems at Tsuen Wan and

Kwai Chung districts of Hong Kong, China (HKC), where the drainage systems had been built several decades ago and they were inadequate in capacity to cope with the increasing surface runoff due to more impermeable pavement during development. The existing drainage needed upgrading to reduce the flooding risk. However, extensive road opening for upgrading existing drainage would cause traffic disturbance and nuisance to road users. Alternatively, a drainage tunnel, with internal diameter of 6.5m and length of 5.1 km, was designed to intercept the surface runoff from the upstream hillsides of the districts for direct discharge into the sea without overloading the existing drainage systems. The total project cost was approximately HK\$1,400 million (US\$ 181 million), financed by the Government of the Hong Kong Special Administrative Region (HKSAR). The construction commenced in December 2007 and was completed in March 2013.

- Application of the Principles under “Physical Connectivity” in the Project

The project is considered a good infrastructure investment case in terms of “Quality of Infrastructure” (LCC, environmental impacts and safety assurance) and “Good Practices and Principles” (environmental and social considerations) as described below.

Firstly, the LCC factor was fully considered in this project by adoption of the energy-free and maintenance-free design. As the design and construction of the drainage tunnel was intended to convey runoff arising from a 1 in 200 year return period rainstorm event, it was designed to have a gradient of 1 in 100 with dry weather flow channel, the intercepted surface runoff collected from the intakes at hillsides was discharged to the sea by means of gravity without pumping. This way of energy free conveyance also met the required self-cleansing velocity for minimizing siltation inside tunnel, thus made the tunnel maintenance free.

Secondly, the tunnel was designed to start intercepting streamflow only when rainfall intensity reaches 30mm/hr or above. During days of dry weather or when rainfall is less intense, the drainage tunnel will not intercept runoff and allow adequate rainwater to route through existing stream courses, thus nourishing them and maintaining the stream course ecology. On the other hand, when rainfall exceeds the threshold, the drainage tunnel will intercept most floodwater. In this way, the drainage tunnel not only lowers the flood risk at downstream urban areas, but also helps protect the ecology of stream courses by keeping flow during dry weather.

Thirdly, the site safety record of this project was good throughout the tunnel construction, which was mainly driven by the Contractor's commitment to high standards of safety in its works and the safety culture instilled on sites by both the Contractor and the supervisory site staff. The Contractor also adopted a scheme called "Back to the Team", which won the 2nd runner up in the 11th Hong Kong Occupational Safety and Health Award.

Finally, the project was conducted in the way that fully conformed to the sub-principle of “Environmental and Social Considerations”. Environmental Impact Assessment (EIA) was

conducted and Environmental Permit was acquired from the concerned authority, environment monitoring was implemented during construction and operation period, measures were taken to improve the living environment for the local community, and close consultations and communications with stakeholders were held before, during and after the construction to ensure the smooth and successful progress of construction and operation of the facilities.

- Factors for the Success of the Project

To conclude, the success of this project can be attributed to the functioning of the four sub-principles, i.e. “LCC”, “Environmental Impacts” and “Safety Assurance” under “Quality of Infrastructure” and “Environmental and Social Considerations” under “Good Practices and Principles”. Regarding the contribution of “Safety Assurance” to the success of this project, the winning of 2nd runner up in the 11th Hong Kong Occupational Safety and the Health Award by the Contractor is worthy of mentioning.

5) Case 5: “Guangdong Energy Efficiency and Environment Improvement Investment Program in PRC” (ADB)

- Outline of the Project

The Multitranche Financing Facility (MFF) Guangdong Energy Efficiency and Environment Improvement Investment Program (the MFF investment program) aimed to achieve demand-side energy efficiencies in industrial and commercial sectors that would yield energy savings in such a scale so as to create a "virtual expansion" of power generation capacity. The MFF investment program was to support retrofits of existing consumption systems using proven, energy-efficient technologies. These innovations were expected to reduce the need to construct and operate conventional coal-fired power plants. The intended impact was improved energy security and environmental conditions in the fast-growing Guangdong Province where energy imports have played a key role in fueling economic growth, energy intensity was high, and predominantly coal-based generation capacity have caused serious environmental problems.

- Application of the Principles under “Physical Connectivity” in the Project

The project is regarded as a good infrastructure investment case in terms of “Quality of Infrastructure (LCC, environmental impacts and safety assurance), “Good Practices and Principles” (environmental and social considerations, procurement guidelines, and financial disciplines) and “People-centered Investment” (generation of local employment and capacity building and technology transfer) as described below:

The MFF investment program supported the use of proven or newer technologies for use in retrofits, including: a) motors and motor-drive systems; b) transformers and reactive power

compensators; c) lighting; d) heating, ventilation, and air conditioning; e) air compressors and pumping systems; f) recovery of waste energy from industry; and g) industrial boilers and industrial cogeneration, as well as other related energy efficiency improvement projects complying with national and Guangdong energy efficiency plans. All these are relevant to the issues of life cycle cost saving and environmental impact mitigation in terms of adoption of new and proven technologies.

The effort made in this project to reduce the consumption of coal was expected to mitigate the threat that coal emissions pose to public health, to lower safety risks associated with coal mining and transport and to Improve energy security and environmental quality, which is regarded as relevant to the issue of Safety Assurance as well as that of Environmental and Social Considerations.

Evaluation of the financial viability of the candidate sub-borrowers was conducted independently by a Third Party to assess the financial status of each subproject. In addition, Third-party measurement and verification (M&V) agencies were contracted to make assessment of subprojects' energy savings and emissions reductions. These two activities reflect the application of sub-principles of Financial Discipline and Evaluation under the Principle of “Good Practices and Principles”.

Guangdong Provincial Government updated management handbooks for the investment program on procurement, financial management and energy saving M&V to ensure smooth and sustainable project implementation, showing a strong ownership of local government in project implementation to ensure a sound management of the investment program, embodying the sub-principles of Inspection and Observation of the Guidelines and Project Cycle Management (PCM).

As one of the major benefits resulting from this project, new jobs in the energy efficiency sector (ESCO) were created. Besides, seminars/workshops were held to promote the EPP program, and to conduct training on energy savings M&V, financial management, and office capacity enhancement. Among them, trainings in financial management, withdrawal and disbursement, and procurement requirements were given to sub-borrowers in particular. Through these activities, the Guangdong EPP model is widely recognized as the pioneer in stimulating energy efficiency investments and continues to provide many valuable lessons for other provinces and enterprises. Here the sub-principles of “Generation of Local Employment” and “Capacity Building and Technology Transfer” are applied.

- Factors for the Success of the Project

The descriptions in the above passage show that the factors for success includes the sub-principles of “Environmental Impacts”, “Safety Assurance”, “Environmental and Social Considerations”, “Financial Disciplines” and “Capacity Building and Technology Transfer”.

But what makes it special in this project is that a model of success was established and was replicated in other areas so as to achieve a ripple effect to contribute to the sustainable and quality

development and growth. In this regard, the sub-Principle of “Capacity Building and Technology Transfer” embodied in this project has been a very important factor for success.

6) Case 6: “Delhi Mass Rapid Transport System (I)-(VI)” (JICA)

- Outline of the Project

This project was planned and implemented with the objective of improving urban environment in Delhi, the capital city of India by constructing the mass rapid transport system totaling 58.6 km in length, thereby contributing to resolve traffic congestion and alleviate traffic pollution. The total plan of the mass rapid transport system has four Phases. The executing agency is Delhi Metro Rail Corporation Limited (DMRC). Line I was commissioned in March 2004, Line II was commissioned in July 2005, and Line III was commissioned in November 2006.

- Application of the Principles under “Physical Connectivity” in the Project

The project is regarded as a good infrastructure investment case in terms of “Quality of Infrastructure” (LCC, environmental impacts, safety assurance), “Good Practices and Principles” (environmental and social considerations, procurement guidelines, financial disciplines and evaluation), and “People-centered Investment” (PCM and capacity building and technology transfer) as described below:

With regard to the principle of “Quality of Infrastructure”, the mass rapid transport system was introduced to resolve traffic congestion and alleviate traffic pollution, and the adoption of the technology of regenerative brake in rolling stocks was adopted to contribute to energy saving and CO2 reduction up to 2.2 million ton (total in the period from 2002 to 2032), embodying the sub-principle of Environmental Impacts. Also, the introduction of safety measure "On Site Visualization" (OSV) using LED technology and enforcement of rules including wearing of safety helmet and safety shoes were measures to apply the sub-principle of Safety Assurance to this project.

In respect to the principle of “Good Practices and Principles”, as a practice to address the issue of Environmental and Social Considerations, Environmental and Social Assessment was conducted in accordance with the Guidelines for Environment and Social Assessment of JICA, compensation for resettled residents was properly handled, and designation of Women-only Train Coach was decided in this project. Meanwhile, procurement via ICB was conducted based on JICA's Guidelines for Procurement under Japan's ODA Loans, economic and financial analysis including FIRR and EIRR calculation was required for evaluation conducted at different stages, reflecting the sub-principles of Procurement Guidelines, Financial Disciplines and Evaluation.

As for the principle of “People-Centered Investment”, the activities of PCM implementation, technical training for new staff, and provision of consultancy services and technology transfer to other metro organizations all over India by the executing agency (DMRC) are relevant to the

sub-principle of PCM, Capacity Building and Technology Transfer.

- Factors for the Success of the Project

Although the factors for success in this project include all the sub-principles mentioned above, the most important ones in terms of contribution to the sustainable and quality development and growth are considered to be: a) the introduction of the mass rapid transport system including the adoption of the advanced technology of regenerative brake in the rolling stocks to address the traffic congestion, traffic pollution, and needs of energy saving and CO2 reduction; b) the introduction of safety measure "On Site Visualization" (OSV) using LED technology and enforcement of rules including wearing of safety helmet and safety shoes; and c) the consultancy services and technology transfer provided to other metro organizations all over India by the executing agency.

In respect to the above-mentioned a), it is noteworthy that the adoption of regenerative brake system was approved by the United Nations' CDM Executive Board (EB) to be registered as the first Clean Development Mechanism (CDM) project in the world's railway sector. What is more, this project as a whole has been frequently mentioned as an example of brilliant success in the cooperation between Japan and India as well as in yen-loan-financed project for several reasons. One of them is that the project's construction work was started in 1998 and part of the railway was opened to traffic in 2002, which was applauded for creating a record in India's public work sector in which the construction work was for the first time able to be completed ahead of schedule. Meanwhile, the rigid enforcement of the measure of wearing safety helmet and safety shoes was also regarded as a great achievement in reforming India's culture of construction work, though this practice had been taken for granted in Japan's construction site. For this reason, the project won the 8 JICA President Commendation and President Prize.

7) Case 7: "RI Motorway Slovakia" (EBRD)

- Outline of the Project

In 2009 Granvia a.s., a special purpose vehicle owned by VINCI Concessions SA and Meridiam Infrastructure Fund (Granvia), was awarded a 30-year availability fee based concession to design, build, finance, operate and maintain the motorway sections of RI between Nitra and Tekovské Nemce and the Banská Bystrica Northern Bypass in the Slovak Republic ("RI Motorway").

The Project's objective was to create the first road PPP concession to be implemented in Slovakia and the first competitively tendered availability-based PPP project in Central Europe outside of Hungary. The total project cost estimated at the time of approval was EUR 1,364 million, financed through a senior facility of EUR 1,050 million. The final term loan facility of EUR 984 million was underwritten by a banking group formed by EBRD, BayernLB, BBVA, Calyon, Dexia Group, HVB Munich (Unicredit Group), KfW, Société Générale, BNP Paribas, Erste Bank, ING, Natixis, NIBC.

EBRD provided EUR 199.8 million (approximately 20%).

- Application of the Principles under “Physical Connectivity” in the Project

The project is considered a good infrastructure investment case in terms of “Quality of Infrastructure” (environmental impacts, safety assurance), and “Good Practices and Principles” (environmental and social considerations, procurement guidelines, financial disciplines) as described below:

With respect to the Principle of “Quality of Infrastructure”, issues of “Environmental Impacts” and “Safety Assurance” are addressed with the adoption of a design with diversion of transit traffic away from a number of cities, towns and villages along the route to reduce congestion, improve traffic and pedestrian safety as well as to reduce traffic-borne air emissions and noise disturbance in residential areas.

Regarding the principle of “Good Practices and Principles”, Environmental and Social Due Diligence (ESDD) was conducted to confirm that the project was in compliance with Slovak law and regulatory requirements and EU environmental standards. Besides, Feasibility Study, Environmental Impact Assessment (EIA), Social Impact Assessment (SIA), as well as procurement through International Competitive Bidding (ICB) etc. were also required.

- Factors for the Success of the Project

The success of this project can be attributed to the proper design of the infrastructure effectively addressing the issue of Environmental Impacts and Safety Assurance, and the practices of environmental and social considerations, procurement guidelines and financial disciplines conforming to international standard of good practices and principles.

4. Findings

The following passage indicates the major results found from the study in the previous section intended to verify how the principles mentioned in the Blueprint are being applied to the actual infrastructure projects conducted by the APEC economies and relevant international institutions. Although only 7 out of 13 cases are indicated in the previous section due to space constraint, the results are based on information of the total 13 cases summarized in Appendix 1.

(1) Comparative Extent of Application in Infrastructure Projects by Sub-Principle

When looking at the 13 sub-principles under key principles for infrastructure development to examine to what extent the respective sub-principles are applied in the actual infrastructure projects, the answer is available as follows:

Table 7 Comparative Extent of Application in Infrastructure Projects by Sub-Principle

Sub-principle	Number of Cases Where the Sub-principle is Applied	Rate of Application of the Sub-principle (%)
Environmental and Social Considerations	13	100
LCC	12	92
Environmental Impacts	12	92
Financial Disciplines	7	54
Procurement Guidelines	12	92
Safety Assurance	5	38
Social Resilience	5	38
Accountability and Outreach	4	31
Evaluation	3	23
Project Cycle Management (PCM)	3	23
Capacity Building and Technology Transfer	3	23
Inspection and Observation of the Guidelines	2	15
Generation of Local Employment	1	8

Note: A number of application indicated in the Table is based on the questionnaire and information provided by institutions and economies and supplementary collection of public information.

As far as the above-mentioned 13 cases are concerned, the sub-principle of “Environmental and Social Considerations” is applied to all the cases, thus its rate of application reaches 100%. Next to this are the sub-principles of “LCC”, “Environmental Impacts”, and “Procurement Guidelines” concerning adoption of advanced technology to ensure high quality of infrastructure so as to contribute to the reduction of life cycle cost, as well as new environmental technology in response to

the need of environmental impact mitigation, both of which are applied to 12 cases with an application rate of 92%.

The fourth and under with respective rates of application are, “Financial Disciplines” (7 cases, 54%), “Safety Assurance” and “Social Resilience” (5 cases, 38%), “Accountability and Outreach” (4 case, 31%), “Evaluation”, “Project Cycle Management (PCM)” and “Capacity Building and Technology Transfer” (3 cases, 23%), “Inspection and Observation of the Guidelines” (2 cases, 15%), and “Generation of Local Employment” (1 case, 8%).

(2) Further Facts Contained in the Results of Comparison

The results of the above-mentioned comparison contain the further facts as below:

- When taking a view of the above-mentioned sub-principles from a cross-sectoral perspective, “LCC”, “Environmental Impacts”, “Environmental and Social Considerations”, and “Procurement Guidelines” are applied to nearly all the target projects. Generally speaking, those projects covering relatively more sub-principles can be found in a wide range of areas including power and transportation which serve as key sectors to facilitate economic growth and social sectors like water and health, and they also appear to be cross-income-level in that they are found in the projects implemented in various economies/countries ranging from low-income to more developed, transitional and developed economies /countries.
- Regarding “LCC” in particular, although many of the above-mentioned cases suggest that this sub-principle has been applied to these infrastructure projects, some of the respondents did not mention it in their answer sheets at all. This may be attributed to two reasons. One is its relatively low degree of recognition as compared with that of “Environmental Impacts”, and the other is the similarity between “LCC” and “Environmental Impacts” in definition. As far as the former is concerned, the fact that all the 4 cases with the sub-principle of “LCC” incorporated in the projects are recommended by the Hong Kong Special Administrative Region (SAR) government shows that the SAR government has a stronger awareness regarding the LCC issue. As for the latter, although the application of a superior environmental technology as defined for the sub-principle of “Environmental Impacts” in the questionnaire survey in many cases contains the meaning of LCC as observed in the energy-efficient technology, there is the inclination that the respondent would understand it as relevant to the sub-principle of “Environmental Impacts” only. It is noteworthy that besides the factor of “Daily Operation Cost” which has close relation to environmental consideration, the other factors like “Reduction, management of risk, and opportunity cost of delay of construction”, “Maintainability”, and “Performance and Durability” are equally important as the components of “LCC”. If, for instance, the concept of “LCC” had become widely accepted owing to the emphasis put on its merit of energy efficiency, it would be necessary to further promote dissemination of proper

understanding regarding this concept.

- The fact that the sub-principles “Environmental and Social Consideration” and “Environmental Impact” are adopted in / applied to many projects may be taken as a sign that many economies are embracing the idea of addressing environmental impact in their actual policy-making regarding infrastructure development in response to the growing concern of the society over the issue. On the other hand, to what extent the issue of “Social Consideration” is addressed by the policies of respective economies is not clear as far as the results of this survey are concerned. This may be attributed to the lack of sufficient information necessary for the proper identification of factors like "Social Environment", "Public Comments/consultations", "Compensation", and "Dispute Settlement", which are classified as items under “Environmental and Social Consideration” while having close relation to the issue of “Social Consideration” in particular.
- With regard to the sub-principle of “Financial Discipline”, it actually concerns two issues, one is whether or not it is being adopted in the policies of the international financial agencies on the lending side, and the other is whether or not it is being applied to the respective infrastructure projects by the respective implementing agencies. As far as the former is concerned, it can be said that every international financial institution attaches importance to this sub-principle as indicated by the results of the interview survey in Step 2 of this study. As for the latter, however, not more than half of the implementation agencies are actually applying this sub-principle to the infrastructure projects as reflected in the aforementioned case study. Accordingly, it becomes necessary to enhance the application of this sub-principle on the side of the infrastructure project implementing agencies from now, and the same is equally true for the sub-principles of and "Safety Assurance".
- Moreover, in respect to those sub-principles with low rate of application such as "Social Resilience", "Evaluation", "PCM", "Capacity Building and Technology Transfer", "Inspection and Observation of the Guideline" and "Generation of Local Employment", even among the international financial institutions they are not necessarily adopted by all the institutions, though example of application can be found from the practice of some of the ODA agencies. In this regard, it might be appropriate to think of these sub-principles as some kinds of relatively new concepts. Nevertheless, as the application of "Capacity Building and Technology Transfer" and "Generation of Local Employment" will be conducive to the capacity building, social welfare improvement and hence to the implementation of growth strategy especially in the case that a foreign company participates in an infrastructure project, it is imperative from now on to heighten the awareness of these concepts among various international financial institutions as well as the infrastructure project implementing agencies of the respective economies.

(3) Points of Common and Difference between Projects Funded by APEC Economies and by International Institutions

When dividing the above-mentioned cases into the group of projects funded by APEC economies and the group by international institutions, some prominent features can be identified. By doing so, the results of the case study show that while all the cases of infrastructure projects are common in their incorporation of the sub-principles of “Environmental and Social Considerations”, “LCC” and “Environmental Impacts” (nearly all the cases), there is the difference in the number of sub-principle applied and the way of distribution of the sub-principles applied between the two groups of cases.

As far as the difference in the former is concerned, it is found that the number of sub-principles applied in the international institutions’ projects is generally more than that of the APEC economies, with the exception of the cases of Hong Kong, China where relatively more sub-principles are incorporated. In addition, whereas the distribution of sub-principles applied in the international institutions’ projects are generally well balanced among the three principles under “Physical Connectivity”, those applied in the APEC economies’ mainly concentrate on sub-principles of “Environmental and Social Considerations”, “LCC” and “Environmental Impacts”, leaving nearly all the items of sub-principles under the principle of “People-Centered Investment” in blank.

This difference can be accounted for by the fact that the international institutions have more rules (guidelines) than the economies regarding infrastructure projects.

5. Conclusions and Recommendations

(1) Conclusions

In light of the results derived from the above analysis as well as the surveys conducted as required by this study, conclusions can be drawn as follows:

- Many, though not all, of the principles and sub-principles incorporated in the Blueprint have been included in the rules (principles) of major international donors as reflected in their guidelines/policies. Among them, “LCC”, “Environmental Impacts”, “Environmental and Social Considerations”, and “Procurement Guidelines” seem to embrace the universality arising from their existence as the desirable properties of infrastructure investment. Meanwhile, besides the above-mentioned three sub-principles, it can be found that “Financial Disciplines” (54%), and “Safety Assurance” (38%) also contain this kind of universality to some extent. The universality indicates that the principles for infrastructure development under the pillar of “Physical Connectivity” as the important elements of cross-sectoral issues, which are committed by the Leaders in 2014 in the APEC Connectivity Blueprint for 2015-2025, are generally applied in practice, and therefore, the importance of the principles of infrastructure development for sustainable economic growth was reconfirmed from the practical perspective.
- On the other hand, with regard to the sub-Principle of “Generation of local employment”, it is applied in only one project in spite of the result of interview survey conducted in the previously mentioned Step 2 showing that many international institutions are making efforts to promote local employment. Whether this is because such kind of efforts have not made any significant progress in reality or monitoring of the progress is actually not conducted, it is still not clear about the reason based on the mere result of this study.
- With respect to the income level specific applicability of the principles, it can be said that the three principles under “Physical Connectivity” are applicable to all kinds of project implementing economies/countries regardless of income level as far as the cross-sectoral projects are concerned.
- Judging from the examples of good practice, it is appropriate to conclude that the existence of these rules has played a positive role in facilitating the development of infrastructure projects. This includes providing a desirable framework for better consensus building among interagency stakeholders and ensuring smooth and proper operation in the course of implementations such as safety measures, environmental considerations, and PDCA cycle, etc.
- In some of the examples of good practice provided by APEC economies, even though there might not be explicit stipulations about these rules, it is inferable that they should be subconsciously influencing the practices of the relevant government agencies and investors of infrastructure projects. This may be substantiated by the two examples provided by Peru and five examples by Hong Kong, China where both the sub-principles of “LCC” and

“Environmental Impacts” are applied, although it is not clear whether or not there are written rules relevant to these sub-principles in the two economies.

(2) Recommendations

1) Recommendations for Both APEC and APEC Economies

- A consistent effort in infrastructure development aiming at facilitating quality development and growth is necessary for promoting a robust, sustainable and well-balanced growth in the APEC region. In this regard, it is vital that the key principles stipulated in the Blueprint be put in the statutory form by APEC economies so as to become more effective in pushing forward infrastructure investment.
- With regard to the sub-principle of “LCC”, although its actual rate of application is relatively high, taking into account its relatively low degree of recognition as compared with that of “Environmental Impacts” as well as the similarity between “LCC” and “Environmental Impacts” in definition, continue efforts to promote appropriate understanding of the definition of this concept are still needed.
- Moreover, in respect to those sub-principles with low rate of application such as "Social Resilience", "Evaluation", "PCM", "Capacity Building and Technology Transfer", "Inspection and Observation of the Guideline" and "Generation of Local Employment" regarded as concepts relatively new, it is necessary to promote awareness of them among various international financial institutions as well as the infrastructure project implementing agencies of the respective economies.

2) Recommendations for APEC

- In order to facilitate quality development and growth, it is indispensable that certain rules/standards for desirable infrastructure development be prevailing not only in the public sectors but also in the private sectors. For this purpose, forceful measures are needed for the sharing of good practices/experiences and enhancing of consciousness in the APEC region. To this end, it is desirable to disseminate the rules/standards for infrastructure development through dialogue between public and private sectors.
- It is necessary to promote awareness of the concepts of those sub-principles with low rate of application such as "Social Resilience", "Evaluation", "PCM", "Capacity Building and Technology Transfer", "Inspection and Observation of the Guideline" and "Generation of Local Employment" regarded as relatively new among various international financial institutions as well as the infrastructure project implementing agencies of the respective economies.

3) Recommendations for APEC Economies

- It is essential for respective APEC economies to further enhance the application of key rules/standards for desirable infrastructure investment. For this reason, it would be necessary for the respective economies to make a review of the current state of application regarding the key rules/standards for infrastructure investment in terms of institutions and their operation. The review needs to be focused on the implementation of respective projects in addition to the policies of the lending institutions so as to reflect on the strategies to promote these key rules/standards.
- The application of sub-principles “Financial Disciplines” and "Safety Assurance" needs to be strengthened on the side of the infrastructure project implementing agencies.

Annex 1 Summary of Examples of Good Practices

Principles Included in Blueprint		Peru		Hong Kong, China (HKC)					USA	ADB	JICA	EBRD (T)		
Income Level		More Developed		Developed					Developed	More Developed	Low Incomed	Transitional		
Sector		Public Health	Transportation (Port)	Environment	Disaster Prevention	Disaster Prevention	Disaster Prevention	Disaster Prevention	Transportation (Road)	Energy-Conservation	Transportation (Railway)	Water	Public Health	Transportation (Road)
Principles	Sub-Principles	I. Provision of Sanitation Services in the Southern Districts of Lima ✓	II. General San Martin Port of Pisco ✓	III. T-Park ✓	IV. Design and Construction of Tsuen Wan Drainage Tunnel ✓	V. Drainage Improvement in Northern Hong Kong Island — Hong Kong West Drainage Tunnel	VI. Happy Valley Underground Stormwater Storage Scheme	VII. West Kowloon Drainage Improvement - Lai Chi Kok Drainage Tunnel	VIII. Transforming Dixie Highway Project (2015)	IX. Guangdong Energy Efficiency and Environment Improvement Investment Program in PRC ✓	X. Delhi Mass Rapid Transport System (I)-(VI) ✓	XI. EBRD Commercialization of the Water Sector in Romania	XII. Turkey: Adana Integrated Hospital. Campus	XIII. RI Motorway Slovakia ✓
Quality of Infrastructure	Life Cycle Cost (LCC)	>Introduction of superior environment technology (desalination and wastewater treatment).	>Adoption of Advanced structural calculations to prevent environment impacts.	>Adoption of building materials that are recyclable, durable and require low maintenance. >Adoption of landscape materials containing recycled constituents that provide durable surface, permeable and softer appearance.	>Adoption of energy-free, maintenance-free design.	>Adoption of an innovative and sophisticated working procedure to reduce the time for construction by at least 28 months.	>Adoption of movable weirs design to reduce the size of the storage tank, construction materials, construction & demolition waste and energy consumption. >Adoption of innovative foundation design to shorten time of construction for 7 months and construction materials. >Adoption of water harvesting system to save about 220,000m ³ of fresh water annually.	>Adoption of "inverted siphon" design and the special TBM technology to reduce cost and energy resource significantly	>Incorporation of permeable surface technology to more effectively manage storm water runoff.	>Development of Energy Efficiency Power Plant (EPP) and introduction of proven or newer technologies for use in various retrofits to save energy consumption and improve energy efficiency	>Construction of the mass rapid transport system contributing to resolve traffic congestion and alleviate traffic pollution. >Adoption of regenerative brake to the rolling stocks contributing to energy saving and CO2 reduction up to 2.2 million ton (total in the network)	>Adoption of energy efficient technologies to improve efficiency and quality in service delivery and to make public health facilities more energy and resource efficient.		
	Environmental Impacts	>Introduction of superior environment technology (desalination and wastewater treatment).	>Adoption of Advanced structural calculations to prevent environment impacts.	>Introduction of superior environment technology (sludge incineration, waste-to-energy, etc.)	>Adoption of advanced design (lowering flood risk in rainy season while keeping needed flow of water in dry season).	>Application of superior excavation technology to avoid environmental pollution.	>Adoption of the above-mentioned advance technologies and designs to reduce construction & demolition waste, CO2 emission and surface runoff and to save energy and water consumption.	>Adoption of the technology of small-scale on-site and off-site reuse of part of the rainwater collected to contribute to the saving of previous water resources.	>Incorporation of permeable surface technology to more effectively manage storm water runoff.	>Development of Energy Efficiency Power Plant (EPP) and introduction of proven or newer technologies for use in various retrofits to save energy consumption and improve energy efficiency.	>Construction of the mass rapid transport system contributing to resolve traffic congestion and alleviate traffic pollution. >Adoption of regenerative brake to the rolling stocks contributing to energy saving	>Adoption of energy efficient technologies to improve efficiency and quality in service delivery and to make public health facilities more energy and resource efficient.		
	Safety Assurance				>Measures of safety won Hong Kong Occupational Safety and Health Award.	>No accident occurred owing to the carefully devised working procedures, the specially designed refuge chambers and stringent site control on safety measures, which won several high-level prizes.	>HUVSSS received Gold, Silver and Bronze Award of Considerate Contractors Site Awards (Public Works - New Works) in 2014, 2015 and 2016 respectively. The scheme aims to encourage contractors to strive for excellence in the aspects of works safety, caring for the workers and minimizing impact on the environmental and community. Apart from it, HUVSSS also received "The Best Construction Sites Housekeeping Award" in three consecutive years from 2014.	>Introduction of special tunnel construction measures and no decompression sickness of workers was achieved during construction.	>Incorporation of the component of complete streets into this project to improve safety on a corridor where 34 fatalities have occurred since 2010.		>Introduction of safety measure "On Site Visualization" (OSV) using LED technology. >Enforcement of rules including wearing of safety helmet and safety shoes.	>Compliance with the EU relevant water legislation in the company's area of service.		
Good Practices and Principles	Environmental and Social Considerations	>EIA process required.	>EIA process required. >Conducing public consultations with the key stakeholders.	>Anti-pollution measures. >Natural environment protection measures. >Environment monitoring. >Smart community. >Public education facilities.	>EIA process required. >Environment monitoring implemented during construction and operation period. >Living environment improving measures. >Close consultation and communication with stakeholders.	>Close consultation and communication with stakeholders, winning the Investor Silver Prizes in General Public Service Award, and Civil Service Outstanding Service Award for 2011.	>Close consultation and communication with stakeholders such as distributing project leaflets and newsletters, arranging public briefings, Stakeholders workshops and Annual Media Briefing, and meeting with District Council members, etc. >Introduction of the concept of driving for green lifestyle and excellence in sustainable built environment in the project, using recycled materials for surface works such as timber decking, solar panels at rooftop of the fan room to make use of renewable energy, greenery soft landscape and vertical greening to promote green city, and locally manufactured materials to avoid carbon emission from material delivery. >The project team members received Civil Service Awards in 2015 as recognition of their outstanding service in minimizing the environmental impact and disturbance to the public arising from the construction works during the contract period. The project team also collaborated closely with different stakeholders, such as District Council, the Hong Kong Jockey Club and the Leisure and Cultural Services Department, to address the public need.	>Maximizing land utility by "One Land 3 Usage" with construction of a stilling basin and pet garden underneath a vehicular viaduct for flood prevention, recreation and transportation purposes.	>Implementation of this project to enhance transportation efficiency, thus helping the corridor continue to develop, attract new businesses, and connect residents to destinations, resulting in greater economic competitiveness. >More efficient travel along the corridor to reduce travel costs for users, improving quality of life.	>Reduction of the consumption of coal expected to reduce the threat that coal emissions pose to public health, to lower safety risks associated with coal mining and transport and to improve energy security and environmental quality. >Designation of Women-only Train Coach.	>Compliance with the EU relevant water legislation in the company's area of service.	>Adoption of the Environmental and Social Action Plan (ESAP) in by the Client to comply with the EBRD performance requirements. >Comprehensive environmental and social examination, public information disclosure and efforts to achieve inclusion of both genders into the public discussion.	>Environmental and social due diligence (ESDD) confirming that the project was in compliance with the Slovak law and regulatory requirements and EU environmental standards. >F/S, EIA, screening Assessment (SIA), etc. required.	
	Procurement Guidelines	>ICB conducted.	>ICB conducted.	>Procurement process and BOT contract following Hong Kong SAR government's rules.	>Procurement process following Hong Kong SAR government's rules.	>Procurement process following Hong Kong SAR government's rules.	>Use of NEC ECC Option C Target Cost Contract with Activity Schedule and following Hong Kong SAR government's rules in procurement.	>Procurement process following Hong Kong SAR government's rules.	>ICB conducted.	>ICB conducted.	>ICB conducted.	>ICB conducted.	>ICB conducted.	

	Financial Discipline	>Setting of fee structure ensuring the project's self-sustainability	>Minimum net equity required >Side-business promoted to ensure financial sustainability			>The contracting parties fully utilize the potential of this contract form to achieve time and cost savings and good quality of works by encouraging development of innovative and cost saving design solutions. >Adoption of pain-gain share mechanism with a common target cost to drive both parties to achieve the same goal. >Adoption of pay when paid system to ensure that all subcontractors are duly paid.			>Evaluation of the financial viability of the candidate subborrowers conducted independently by a Third Party to assess the financial status of each subproject.	>FIRR and EIRR calculation required.	>Compliance with the EU relevant water legislation in the company's area of service.	>Arrangements including Project Agreement etc. designed to ensure financial sustainability. >Debt repayment based on robust debt service coverage ratios.	>Economic evaluation of the proposed project including EIRR calculation conducted by the Slovakia government. >Review of the evaluation conducted by EBRD.	
	Evaluation					>By various forms of audit conducted by both internal and external parties on various aspects like contract and quality compliance, project finance, etc.			>Third-party M&V agencies contacted to make assessment of subprojects' energy savings and emissions reductions.	>Ex-ante and Ex-post evaluations conducted.	> Benchmarking of the executor's performance among other national and international operators.			
	Inspection/observation of the Guidelines					>The Development Bureau has developed the Practice Notes for the implementation of project adopting NEC ECC.			>Guangdong Provincial Government updated management handbooks for the investment program on procurement, financial management and energy savings M&V to ensure smooth and sustainable project implementation.		>Compliance with the EU relevant water legislation in the company's area of service.			
People-Centered Investment	Project Cycle Management (PCM)					>Strong ownership with mutual trust and collaboration amongst all parties throughout the project implementation ensuring sound management of the investment program.			> Strong government ownership in project implementation ensuring the sound management of the investment program.	>Project cycle management (PCM) properly implemented.		>EBRD's technical cooperation support including the development of a Value for Money ("ViM") Methodology and PPP Contract Implementation and Monitoring.		
	Generation of Local Employment					>The proposed works has created 270 jobs (240 for labourers and another 30 for professional/technical staff) providing a total employment of 14500 man-months.			> Creating jobs in the energy efficiency sector (ESCO).					
	Capacity Building and Technology Transfer					>Carrying out presentations/site visits to introduce this flood prevention project and its innovative features. >Sharing experience with the industry practitioners on the use of NEC ECC Option C.			>Seminars/ workshops held to promote the EPP program, and to conduct training on energy savings M&V, financial management, and office capacity enhancement. >Trainings in financial management, withdrawal and disbursement, and procurement requirements given to subborrowers.	>Technical staff newly recruited undergoing a seven-month-training at the training center. > DMRC, the executing agency providing consultancy services and transferring its techniques to other metro organizations all over India.	>Transfer of commercial and managerial skills in water and wastewater operations to less-developed regions of the country.			
	Social Resilience				>Implementation of this project aiming to strengthen Hong Kong's Social resilience against climate change and natural disasters.	>Implementation of this project aiming to strengthen Hong Kong's Social resilience against climate change and natural disasters.	>This project is to strengthen Hong Kong's social resilience against climate change and natural disasters.	>Implementation of this project aiming to strengthen Hong Kong's Social resilience against climate change and natural disasters.	>Implementation of this project aimed to achieve greater economic competitiveness so as to strengthen the region's social resilience against economic fluctuation.					
	Accountability and Outreach		> Conducing public consultations with the key stakeholders.		>Close consultation and communication with stakeholders to conform with the public disclosure policy.	>Close consultation and communication with stakeholders to conform with the public disclosure policy.	>Complying with the public disclosure policy to consult and closely communication with stakeholders.	>Close consultation and communication with stakeholders to conform with the public disclosure policy.						

Note: All the projects above are targets of analysis in chapter 4 "Findings" of the main text, but only those with a ✓ attached to the project name are dealt with in Chapter 3 "Results" as examples of good practice.

Appendix 2. Survey Questionnaire

Study on Infrastructure Investment in the APEC Region

Introduction:

At the APEC Economic Leaders' Meeting (AELM) in 2014, Leaders endorsed the "APEC Connectivity Blueprint for 2015-2025" based on the commitment at AELM in 2013. The Blueprint stipulates that under physical connectivity, with regards to cross-sectoral issues, the Leaders will focus on (1) adopting comprehensive assessment methods that considers key quality elements in evaluation of infrastructure project proposals and (2) enhancing the application of good practices and people-centered investment for planning and implementing infrastructure projects.

In response to this call, Japan has proposed to conduct an evidence-based study that will illustrate desirable principles and modalities for infrastructure development conducive to sustainable and quality of growth in the APEC region (2015/SOM1/CTI/014). The study has taken stock of various existing rules/standards adopted by donors/creditors of both public/private, multilateral/bilateral, and those of developed/developing economies, which will be supplemented by case study. The case study aims to examine and summarize the outcomes of the above-mentioned stock-taking study through an empirical analysis. The outcome from the series of studies, which empirically verify the key quality elements, will help APEC economies to enhance awareness of a set of existing guiding principles to be applied for infrastructure investment.

The objective of this questionnaire is to help draw general principles and modalities on the quality of infrastructure development based on case studies from different organizations. Comments/ inputs on the outcome of the study will be sought from CTI and from the private sector through APEC Business Advisory Council (ABAC). A final report of this study will be finalized by the APEC Ministerial Meeting and the APEC Economic Leaders Meeting in November 2016.

Questionnaire on infrastructure development in the APEC Region:

Please provide answer to the questions below by sending to apec.japan@mofa.go.jp. (please see the example answer in the attachment) **by June 28**.

1. Provide general information of recent successful case(s) (i.e. a project completed within five years) on the infrastructure development project, conducive to sustainable and quality of growth in developed/developing economies. Please send details on the project information (i.e. a project document, evaluation report or any related documents).
2. Describe to what extent an element(s) of (1) quality of infrastructure, (2) good practices and principles, and (3) people-centered investment, has been considered prior to the project implementation and thus there element(s) has contributed to the success as a critical factor. (Please see the attached Table below for constitutes of each element.)

<Example Answer>

1. General information of the project

- Project name: XXX Project
- Overview: The project is designed to increase the national energy efficiency through expansion of transmission lines/distribution system and substations, thereby contributing to stable energy supply and to expansion of the national economic growth in XXX (country name). The total project cost is USD 300 million, financed by XXXX (a financing institution). The project period is April, 2008 – March 2013.
- Project details: Please see the URL below for a project document (at appraisal stage) and/or an evaluation report.

<http://www.YYYY.XXXX/ZZZZ>

2. The project is considered as a good infrastructure investment case in terms of quality of infrastructure (environmental impacts) and good practices and principles (environmental and social considerations, procurement guidelines, and financial disciplines) as described below.

(1) Quality of infrastructure:

(Environmental impact)

The project introduced superior environmental technologies, such as high-voltage and low-loss wires, to mitigate power losses in transmission and distribution.

(2) Good practices and principles:

(Environmental and social considerations)

An environmental examination report was prepared at the feasibility study stage and was approved by the XXX agency of the XXXX country. During the construction, measure were taken to address air and water quality and noise to satisfy the XXX criteria through controlling construction workload and notifying local residents of the construction schedule.

(Procurement guideline)

The project component of construction (of transmission and distribution system and substation) and consulting service was procured based on the XXX guidelines of the XXXX Bank.

(Financial discipline)

The project utilized the Financial Internal Rate of Return (FIRR), which is XX%.

<Table List of Areas of Guidelines or Evaluation Criteria>

1. Quality of Infrastructure

- (1) Life Cycle Cost (LCC)
 - a. Reduction/management of risk/opportunity cost of delay of construction
 - b. Daily operation cost
 - c. Maintainability
 - d. Performance and Durability
- (2) Environmental Impacts
 - a. Applying superior environmental technologies
- (3) Safety Assurance
 - a. Guidelines for safety and measures taken in the case of accident
 - b. For labors
 - c. For neighborhood and region
 - d. For users
 - e. Resilience to natural disasters

2. Good Practices and Principles

- (1) Environmental and Social Considerations
 - a. Availability of environmental and social guidelines
 - b. Permits and approvals
EIA and environmental permits
Explanations to the public
 - c. Anti-pollution measures
Air, Water, Waste, Soil, Noise and vibration, Subsidence, Odor, Sediment
 - d. Natural environment
Protected areas, Ecosystem and biota, Hydrology, Topography and geology, Management of abandoned sites
 - e. Social environment
Resettlement, Living and livelihood, Heritage, Landscape, Ethnic minorities and indigenous peoples, Working conditions (including occupational safety), Community health, safety and security
 - f. Issues during construction
Impact during construction
Accident prevention measures
 - g. Public comments/consultations
 - h. Compensation
 - i. Monitoring
 - j. Dispute Settlement (including Objection Procedures)
- (2) Procurement Guideline
 - a. Accessibility (including brochures and pamphlets)
 - b. Bidding
Sample Bidding Documents
International Competitive Bidding
Local Component
FIDIC Standard
- (3) Financial Discipline
 - a. Debt Sustainability Analysis/Creditworthiness (reference to IMF DSA)
 - b. EIRR/FIRR (including adequate level of beneficiary payment, if any)
 - c. Lending conditions (interest rates, repayment period, grace period)
- (4) Evaluation
 - a. Ex-ante Evaluation
 - b. Implementation Stage Evaluation
 - c. Ex-post Evaluation
- (5) Inspection/observation of the guidelines
 - a. Mechanism for inspection (including third party monitoring system)
 - b. Fraud
 - c. Conflict of interest

3. People-Centered Investment

- (1) Project Cycle Management
 - a. Participation of project beneficiaries in the project preparation, implementation and evaluation
 - b. Management, evaluation and monitoring methods in the project cycle
- (2) Generation of local employment
- (3) Capacity building/technology transfer
- (4) Social resilience (as consequences of (2) and (3) in particular)
 - a. Economic fluctuations
 - b. Climate change and natural disasters (including improvement of the environment)
- (5) Accountability/Outreach
 - a. Public Disclosure Policy
 - b. CSO engagement