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APEC Guidebook on Quality of Infrastructure
Development and Investment
(Revision)

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Glossary of Terms

Financial Soundness:	Capability of a corporation (including SPC in PPP project) to meet its financial obligations in full and on time
Fiscal Soundness:	Capability of a government or other public agency to honor both short- and long-term financial and economic obligations
Government:	Central government of the subject economy
Implementing Agency:	Government agency in charge of individual infrastructure projects such as ministries and local governments
LCC:	Life Cycle Cost or total cost of a project over its life which may include costs for design, construction, operation and maintenance
Local Government:	Governments of the sub-sovereign levels of the economy, including state, prefecture, city, and municipality
PPP:	Public-Private Partnerships or a modality of infrastructure project which utilizes various capacities of the private sector
PPP Project Company:	A private entity that carries out a PPP project based on a contract with an implementing agency
Public Agency:	Public organization from the subject economy, including ministries, agencies, regional governments, and other forms of public organizations
Value For Money (VFM) :	The optimum combination of whole of life costs and quality (or fitness for purpose) of the good and service that meet the user's requirements.

About This Guidebook

APEC economies expect rapid infrastructure development, investment growth, and greater connectivity in conjunction with their economic growth and urbanization. It is observed that some economies, facing budgetary constraints for infrastructure investment, fix their attention to minimizing initial capital investment costs in their project and service procurement. However, such practices have created some unfavorable consequences such as (a) lack of long-term durability due to insufficient maintenance and operation, (b) unstable and intermittent delivery of service, (c) insufficient attention to resistance to and recovery from natural disasters, and (d) insufficient attention to protection of environmental and public safety.

In light of these circumstances, the APEC Leaders' Declaration 2013, recognized the importance of ensuring "Quality of Infrastructure", encouraging APEC economies to pay more attention to critical aspects of infrastructure services such as (a) achievement of optimal LCC with considerations for service performance and durability, (b) mitigation of social and environmental impacts, (c) ensuring safety and adequate maintenance systems. It was also recognized that APEC economies are encouraged to continuously carry out capacity development for government officials allowing them to identify and prepare infrastructure projects in consideration of the above-mentioned factors. Subsequently, the first APEC Guidebook on Quality of Infrastructure Development and Investment was developed in 2014 in line with the APEC Leaders' Declaration 2013. In addition, in 2014, APEC developed the APEC Connectivity Blueprint for 2015-2025 as a strategic guide for current and future initiatives that will bring the APEC region closer together, and as a high-level framework towards which many APEC work streams will focus their efforts.

Since then, the importance of ensuring the quality of infrastructure has been recognized not only in the APEC but also in other international arena. For example, the United Nations' 2030 Agenda for Sustainable Development Goals ("SDGs 9.1) in 2015 sets the goals of developing quality, reliable, sustainable and resilient infrastructure to support economic development and human well-being, with a focus on affordable and equitable access for all. In light of rapid change in the global economy and the rising importance of infrastructure, APEC Ministers welcomed an initiative to upgrade the Guidebook in 2017.

This Guidebook is a positive endeavor towards implementing the APEC Connectivity Blueprint. Against this background and recognition, this Guidebook provides model approaches and procedures for government officials and stakeholders of APEC economies for implementing quality infrastructure projects based on a common understanding of quality infrastructure development and investment. It is encouraged to use this guidebook with a view to promoting policy coordination, facilities connectivity, unimpeded trade, financial integration, and people-to-people bonds in the Asia-Pacific region.

It is understood that each APEC economy has different policies, capabilities and experiences, and therefore, the Guidebook is also meant to be used as a practical and non-binding reference by economies at different stages of economic and institutional maturity,

on the basis of compliance with local laws and regulations. Finally, it is expected to contribute to improving the capacity of government officials and to ensuring the quality of infrastructure projects in APEC economies.

Chapter 1: Quality of Infrastructure

1.1 Characteristics of Infrastructure Projects

Infrastructures are indispensable in supporting business activities and people's daily lives in fields such as transportation (roads, railways, airports, and seaports), electricity, water works and waste water treatment, and solid waste management. Infrastructure development is essential for promoting sustainable social and economic development to meet the basic needs of people, while achieving inclusive growth through job creation and poverty reduction. The general characteristics of infrastructure projects are summarized as follows:

a) **Public Goods**

Infrastructure is provided as public goods for the purpose of the holistic development of a society. Public goods are by definition non-competitive and non-exclusive and "open" (provide open and universal access to services). Traditionally, infrastructure development is regarded as the role of governments where public funds are used as the primary funding source. In cases where private enterprises are responsible for a part or the whole of construction and operation of infrastructure projects, they are selected through fair and transparent public procurement process.

b) **Externalities**

Infrastructures not only provide benefits to users but also influence the broader economy. The latter effect is called an external effect or "externality". Infrastructure development generates various ripple effects such as revitalizing regional economies through large public investment as well as improving regional productivity and creating new industries and employment in the medium and long term.

c) **Extensive Impacts on Society and the Environment**

Given that infrastructure development entails large scale investment, it has extensive influences over society. Its impacts may include both positive and negative effects: The former contributes to socioeconomic development, while the latter impedes the sustainability of local communities and environments. In order to prevent such negative impacts, properly adhering to international standards and practices is helpful, especially with respect to public and environmental safety.

d) **Long Project Life**

Infrastructures provide services over long periods of time. The expected lifetime of infrastructure could be more than 30 years in the case of power generation plants and transportation facilities such as roads and airports. Therefore, "economy", "fiscal soundness" and physical durability need to be considered. At the same time, infrastructure needs to be resilient to disasters and flexible to climatic changes from a long-term perspective.

e) Transparency and Accountability

In development of infrastructure projects, public funds and resources are often utilized. Thus it is imperative that identification and preparation, procurement and implementation (construction and operation) of projects by public agencies must all maintain “transparency” and accountability. In addition, most infrastructure facilities are immovable and cannot be traded easily in the market. Therefore, once implemented, an infrastructure project are not assumed to be canceled or postponed in principle.

1.2 Elements that Ensure the Quality of Infrastructure

In consideration of the characteristics of infrastructure projects which are addressed in the previous section, this guidebook identifies the following five elements as the principal elements that ensure the quality of infrastructure.

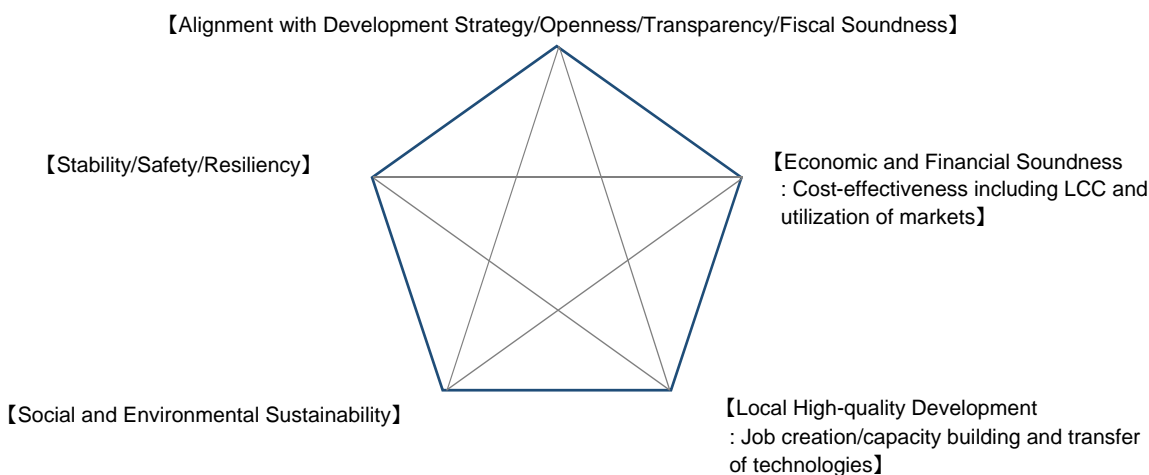


Figure 1 Five Elements that Ensure Quality of Infrastructure

●Alignment with Development Strategy/Openness/Transparency/Fiscal Soundness

Infrastructure projects must be implemented with strict adherence to openness, transparency, economic efficiency in view of LCC and fiscal soundness, as mentioned in the previous section. They must be in line with medium- and long-term development strategies at central and regional levels, and include and incorporate dialogues with stakeholders from the early stages of projects such as project preparation and prioritization. It is essential that the host economy maintain a transparent, non-discriminatory and predictable environment and greater openness to FDI in local infrastructure. In particular, careful attention should be paid to the following elements:

- (a) Strengthening connectivity efficiently to facilitate expansion of the global supply chain
- (b) Use of effective technologies such as information and communication technology
- (c) Attraction of private investment and development of new industries
- (d) Development of mid-term development plan based on a long-term multi-sector demand forecast
- (e) Assessment of debt sustainability and fiscal outlook
- (f) Adoption of public procurement procedures based on international norms
- (g) Openness in operation
- (h) Transparency in infrastructure development
- (i) Consideration of ecosystem and further promotion of environmental friendly infrastructure
- (j) Resilience to climate change and natural disaster
- (k) Energy security and sustainability
- (l) Conservation of biodiversity
- (m) Disaster prevention

- **Stability/Safety/Resiliency**

In order to ensure stable, safe, continuous, affordable and reliable access to infrastructure for all people, appropriate measures should be taken in each stage of a project, i.e. identification and preparation, design, construction, and operation. For that purpose, reliable organization and human resources should be secured by the governments and/or private enterprises, together with sufficient project funding. It is also important to ensure safety by carefully assessing the risks of unpredictable events including natural disasters, terrorism, cyber-attacks and preparing measures to remove or transfer those risks, and using quality building materials. Also, appropriate counter-mechanisms shall be designed and put in place to minimize negative impacts on the public, and ensure prompt resumption of service if the above-mentioned risks materialize. Deliberate preparation of such measures significantly improves overall resilience of the society and economy.

- **Economic and Financial Soundness: Cost-effectiveness including LCC and utilization of markets**

In the project identification and preparation stage, it is important to verify cost-effectiveness of projects to achieve VFM of the investment in infrastructure. With respect to costs, it is indispensable to estimate not merely the initial investment but total LCC of the project. It is important to take into consideration of affordability to local people who use the facilities and services of the infrastructure. With regard to effectiveness, both quantitative and qualitative effects should be examined, taking external effects into account, as mentioned in the previous section of this guidebook. To “leverage” VFM of public

investment, cooperation with the Multilateral Development Bank (MDB) and other development partners, and mobilization of private funds, including through PPP, are important and worth considering. To mobilize private funds, it is necessary to secure a sound investment climate including transparent and foreseeable legal and regulatory framework for private enterprises, while ensuring transparency and preventing corruption. Additionally, governments are required to verify the financial sustainability of the project by checking long-term cash flow of the project and controlling the fiscal status of the agencies in charge of implementation.

- Social and Environmental Sustainability

Social and environmental standards applied to infrastructure projects must be determined at appropriate levels with objective and quantitative indicators. These targets should be reviewed continuously throughout the project life to ensure sustainability for future generations. It is expected that negative social and environmental impacts will be avoided or mitigated through application of reliable safeguard procedures and standards which comply with international practices including those of MDBs, and which are consistent with local laws and conditions. It is also important to promote environmental friendly infrastructure to realize a low-carbon society which can flexibly react to the progress of global warming and climate change. In terms of existing facilities, proactive rehabilitation and reinforcement are effective in preventing negative climate impacts. Furthermore, inclusiveness including gender equality and equitability for the socially vulnerables, which is key for societal sustainability and stability, should be appropriately considered.

- Local High-quality Development: Job creation/capacity building and transfer of technologies

Infrastructure projects, in general, are large in scale and have a significant impact on the development of surrounding regions and economies. In view of high-quality development and achieving inclusive and sustainable growth through infrastructure projects, it is desirable that projects are operated with local resources with enough ownership and responsibility and tailored to local conditions. Bearing this in mind, infrastructure projects need to be welcomed and/or accepted, and widely accessed by the local community. It is also crucial to promote local employment and establish conditions and schemes for job creation. In cases where the capabilities and the skills of the local community are insufficient in the early stage of the project, it is worthwhile for the government to establish a mechanism for capacity building and transfer of technology and know-how from medium- and long-term perspectives.

Chapter 2: How to Advance Infrastructure Development

2.1 Methods of Infrastructure Project Preparation, Procurement and Delivery

(1) Conventional Procurement and PPP

The public sector has traditionally assumed the primary role in developing infrastructure and providing public services in many economies. However, in the last few decades, the private sector has been taking over the government's role by assuming a part or all of infrastructure development and service provision. Accordingly, infrastructure project procurement methods have been diversified. It is expected that agencies in charge of infrastructure projects would select the most appropriate method available for them.

In traditional procurement, the design, construction, operation and maintenance of a project are procured separately by implementing agencies. In addition, a lump sum purchase order for engineering, procurement and construction (EPC) is one of the traditional procurement modes. These projects are generally financed by using public funding sources. On the other hand, in PPP procurement, some or all of the above work is combined and entrusted to a single private entity or a consortium consisting of several private entities, i.e. PPP Project Company. Also, various liability associated with project are transferred to the PPP Project Company based on a PPP agreement which is concluded between an implementing agency and a PPP Project Company. The primary purpose of adopting PPP procurement is to improve the VFM of public spending by taking advantage of capacities and innovativeness of private enterprises.

Nowadays, PPP has been widely adopted across APEC economies and there are high expectations for its effective use for future projects in the region. However, PPP cannot be adopted in isolation, and governments are responsible for creating and sustaining "PPP-enabling environments" through various efforts such as improving the overall investment environment, developing relevant legal, regulatory and institutional frameworks, and engaging in capacity development of public officials with regard to new procurement methods and contract management.

(2) Characteristics of PPP

There is no single clear-cut definition of PPP and the modalities are in fact highly varied. Typical features of PPP include appropriate risk-sharing between public and private sectors, collective procurement, long-term contracts, output specification, as well as performance-based incentives. The essence of these features is summarized below.

- Appropriate risk-sharing between public and private entities

Risks which the private sector can manage better than public sector are transferred to the private sector based on a general understanding that "The risks should be allocated to the party that is best able to manage them". Specific risk-sharing is determined and stipulated

in the PPP agreement which is concluded between a government implementing agency and PPP Project Company.

- Collective procurement

Some or all of the project-related work such as design, construction, operation, maintenance, and financing are entrusted collectively to a single private entity or a consortium, namely, the PPP Project Company. In particular, by combining the design, construction and operation work, it is expected that various private sector innovations can be created and can contribute to improving VFM; project design will be optimized, construction efficiency will improve, flexible and appropriate operations and maintenance will be carried out, and high-quality services will be provided in a seamless manner.

- Long-term contracts

PPP projects, unlike conventional projects, usually adopt multi-year contracts. This mitigates government's annual fiscal constraints and helps ensure stable provision of public services both in terms of quantity and quality. The private sector is expected to plan and implement medium- and long-term maintenance and rehabilitation plans irrespective of the government's fiscal status every year, which also leads to stable service provision and optimization of LCC.

- Output specification

PPP agreements specify services (outputs) required by implementing agencies and stipulate quantitative Key Performance Indicators (KPI), while minimizing input specifications related to facilities and equipment. This ensures governments procure appropriate services that are truly required by people or enterprises. This also avoids “gold-plating” of projects and helps achieve optimal LCC.

- Performance-based Incentives

Revenues of PPP project companies are properly linked to their performance, i.e. the quality and quantity of services in addition to their availability. It allows for the avoidance of ethical misunderstandings of private enterprises and provides incentives to continuously deliver required services. It can even serve the function of encouraging private enterprises to proactively make efforts to improve the quality of services. Incentive mechanisms, including performance evaluation criteria and procedures are stipulated in PPP agreements.

The table below summarizes the key differences between conventional procurement and PPP.

Table 1 Typical difference between conventional procurement and PPP

Feature	Conventional Procurement	PPP projects
Risk Sharing	Limited risk sharing (public sector bears the risk)	Appropriate risk sharing between public and private
Procurement Package	Separate procurement	Collective procurement
Contract Period	Single-year contract or Multi-year contract	Multi-year contract
Specification	Input specification	Output specification
Incentive	Non-performance-based or Performance-based	Performance-based

The basic idea of the PPP is to provide incentives to the private sector to create innovation and to enhance VFM by adopting the features above.

It is widely recognized that these features of PPP, in fact, can also be adopted in conventional procurement. There are also hybrid models of conventional procurement and PPP, like DBO (Design-Build-Operate), where the public sector procures financing while entrusting all other work to a private entity. It is advisable, therefore, that all of these features be appropriately considered regardless of project modality and procurement type. Public agencies are also expected to make efforts to create innovation in infrastructure procurement through trial and error.

(3) Classification of PPP

Although there are several classifications of PPP, two classification are often cited in practice. The first classification focuses on different combinations of functions and the second one is based on type of payment¹.

(a) Classification based on the combination of functions

PPP involves new assets—often called greenfield projects; however, it can also be used to transfer responsibility for upgrading and managing existing assets to a private company—known as brownfield projects. A central characteristic of a PPP contract is that it bundles together multiple project phases or functions. Nonetheless, the functions for which the private party is responsible vary and depend on the type of asset and service involved. Typical functions include design, construction or rehabilitation, finance, maintenance and operation. Therefore, PPP can be simply categorized based on different combination of functions. These major types are Design-Build-Finance-Operate (DBFO), Build-Operate-Transfer (BOT),

¹ As another classification, PPP can also be categorized based on contract type, such as Concession, Off-take, and Availability Payment.

Rehabilitate-Operate-Transfer (ROT), Performance-Based Operations and Maintenance (O&M) etc.

- Design-Build-Finance-Operate (DBFO)

A contract that transfers all these functions to the private company, including Design, Construction (Build), Financing and Operation, may simply be described as DBFO, with responsibility for maintenance implied as part of operations. It can be used in greenfield projects. Design-Build-Operate (DBO) is a similar model but utilizes public financing rather than private financing.

- Build-Operate-Transfer (BOT)

This approach to describing PPP for new assets captures legal ownership and control of the project assets. Typically, under a BOT project, the private company owns the project assets until they are transferred at the end of the contract. The term Build-Transfer-Operate (BTO) can also be used when project asset ownership belongs to the public sector during operation period.

- Rehabilitate-Operate-Transfer (ROT)

As for brownfield projects, “Rehabilitate” may take the place of “Build” where the private party is responsible for rehabilitating, upgrading, or extending existing assets. This may also be called Rehabilitate-Transfer-Operate (RTO) depending on project asset ownership.

- Performance-Based Operations and Maintenance (O&M)

O&M contracts for existing assets may come under the definition of PPP where they are performance-based, long-term, and involve significant (or substantial) private intervention.

(b) Classification based on type of payment

PPP can also be categorized based on a type of payment which means revenue sources of the PPP Project Company; these are broadly categorized as User Charge and Government Payment. It is important to correctly understand the differences and features of these modalities and properly select the best option which embraces the uniqueness and characteristics of independent projects.

- User Charge

User charge refers to the direct payment by beneficiaries or end-users who purchase public products and services. The PPP Project Company bears demand risk in principle. There are cases where the revenue of the PPP Project Company can be supplemented through provision of subsidies or so-called Viability Gap Funding (VGF) by government to ensure financial viability of the project.

- Government Payment

Government payment refers to the direct payment by government to purchase public products and services, which is often called as availability payment, usage payment and performance payment. Those payments are made in return for securing the availability of facilities (e.g. school) or provision of products and services (e.g. water supply) etc. Implementing agencies bear demand risk in principle. Performance of the PPP Project Company is carefully monitored and evaluated by the implementing agencies in charge. The value of the Government Payment can be adjusted based on the performance of the PPP Project Company.

2.2 Considerations to Ensure the Quality of Infrastructure at Each Stage

(1) Overview of the life cycle of an infrastructure project

This section explains the life cycle of infrastructure projects and items to be considered at each stage of the cycle to ensure the quality of infrastructure. Figure 2 depicts typical life cycles of infrastructure projects with actions to be taken by implementing agencies.

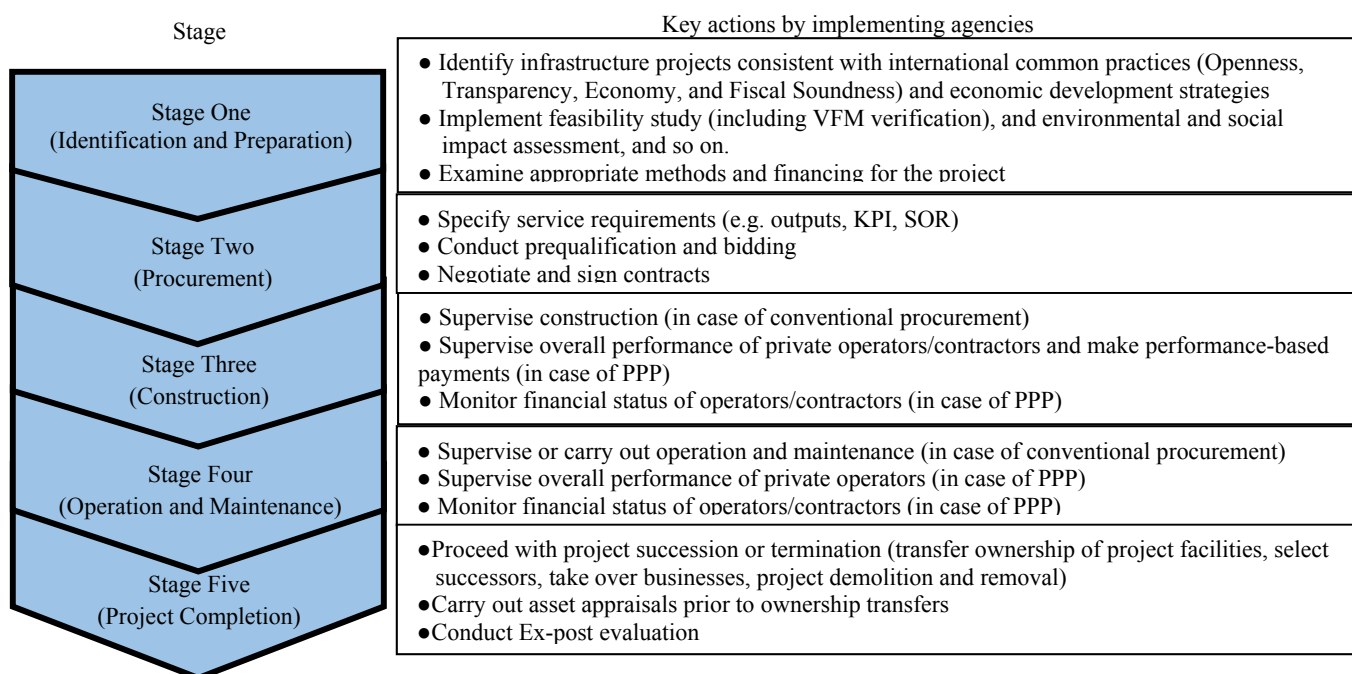


Figure 2: Infrastructure Project Stages and Key Actions by Implementing Agencies

In Stage One, the project planning and feasibility study are the key actions to be taken by implementing agencies. Necessity and effects of the project should be verified. Then scope of work, technical requirements, project modality, schedule, funding sources should also be studied. It is particularly important to (a) identify specific infrastructure projects which meet international common practices (Openness, Transparency, Economy, Fiscal Soundness, Local Development) in line with its own development strategy, (b) implement feasibility

studies (FS)(including VFM verification and financial sustainability assessment²)³ and environmental and social impact assessments, and so on, (c) examine funding sources.

In Stage Two, private entities that will implement some or all of the project are selected. Generally, prequalification (P/Q) and bid, including evaluation of proposals, will be conducted to select the best proponent as the preferred bidder to negotiate and conclude a contract. Although the process may vary depending on types of projects, the entire procedure must ensure fairness and transparency.

In Stage Three and Stage Four, design, construction, operation and maintenance of the project are carried out. Design and construction of project facilities are commonly entrusted to the private sector. As for operation and maintenance, implementing agencies either conduct operations themselves or entrust it to the private sector. In the latter case, implementing agencies should manage contracts and supervise overall performance of the private operator, and make payments based upon performance in case of typical PPPs.

In Stage Five, where the project reaches its closure, transfer of project assets, selection of the successive operator, asset appraisals and hand-off of operations should be carried out. It is necessary to properly implement these procedures so that the stable supply of the infrastructure service remains uninterrupted. Also, it is desirable to conduct ex-post evaluation of the project to verify lessons learned.

(2) Practical Considerations in Each Stage

[Stage One: Identification and Preparation]

- Identify infrastructure projects consistent with international common practices (Openness, Transparency, Economy, Fiscal Soundness, and Local Development) and economic development strategy

It is a prerequisite for formulating individual infrastructure projects that the projects are consistent with international common practices with particular attention to Openness, Transparency, Economy, Fiscal Soundness, and Local Development. It is also necessary for governments and public agencies to develop medium- and long-term cross-sectorial economic development strategies. Master Plans that define medium-and long-term strategy for each sector and sub-sector can enhance effectiveness of the infrastructure. Each infrastructure project should be contextualized within these strategies and master plans. Among the projects identified in those plans, project preparation and related studies are carried out based on relative priority.

² Financial sustainability assessment confirms government and/or implementing agency's capacity to secure required budget including future realization of contingent liabilities for the whole life of the project

³ These items might be implemented separately in accordance with economies' respective practices.

- Implement FS (including VFM verification and financial sustainability assessment) and environmental and social impact assessments, etc.

FS examines feasibility from technical, economic, financial and legal perspectives. Typical items to be considered in FS are shown in the following table.

Table 2 Typical Items to be Considered in FS

Item to be considered	Contents
1. Alignment with policies and regulations	Confirm alignment with government policy, development strategy, related laws and regulations
2. Location and natural environment	Identify project locations and surrounding natural conditions
3. Demand forecast	Conduct demand forecast with regard to the infrastructure services
4. Basic technical requirements	Examine necessary capabilities, scale and specification of the project assets
5. Cost Estimation	Estimate life cycle project costs including land acquisition, construction, operation and maintenance etc.
6. Economic efficiency from LCC perspective	Examine social and economic benefit to be generated by the project from LCC perspective
7. Profitability	Examine profitability of the project based on cost estimation and demand forecast
8. Project method and funding	Examine project method, funding sources including VFM verification, and debt sustainability
9. Environmental and Social Impacts	Assess environmental and social impacts of the project and consider necessary countermeasures
10. Schedule	Develop detailed implementation schedule and action plan

In the first step information collections and its analysis should be conducted with regard to items such as project location, natural environment, existing facilities, and future demand for the service as basic data. Then, basic technical requirements of the project are considered. Project modalities such as conventional procurement or PPP, VFM verification, environment impact assessment, and funding sources should be explored at this stage (see the next section for details). If implementing agencies face difficulty in securing sufficient human resources to implement FS on their own, use of external resources such as private consultants should be considered.

- Examination of project modality and funding sources

It is essential to study project modality and funding sources in the first stage. They should be selected based on VFM consideration from the perspectives of the government and taxpayers. Typical modalities are conventional procurement and PPP which has further variations. The scope of work for the private sector and funding sources should be carefully examined. For example, funding sources can be government funding (from tax revenue, bonds), ODA (multilateral, bilateral), private finance and a combination of these. It is also necessary to examine fiscal sustainability of the government in relation with the budget for the project.

【Stage Two: Procurement】

- Specifications and Incentive Mechanisms

Implementing agencies should define specifications such as required services (outputs) and standards related to both quantity and quality. It is also important to properly stipulate them in the contracts to be closed between public and private entities. Clear definitions of the standards included in the contracts will ensure smooth implementation of quality projects as well as quality of service. In the case that performance-based payment mechanisms are adopted, appropriate evaluation procedures and incentives, including penalties, such as payment reductions due to under-performance and contract termination due to extreme defects should be incorporated in order to secure the proper performance of private operators.

- Pre-qualification and Bidding

This process consists of two stages: pre-qualification stage and bidding stage (evaluation and award of proposals). Criteria for review and evaluation may differ by project, however, fairness and transparency must be maintained throughout all transactions. Reference to international procurement rules and guidelines (e.g. WTO Government Procurement Agreement, World Bank Procurement Guidelines) should be made available as necessary.

In these stages, appropriate review and evaluation criteria should be determined by taking the purpose and nature of the project into account. The review and evaluation should be conducted on objective grounds; it is important to carefully review applicant track-records, including past performance and former client evaluations. Testimony or certification by a third party or public authority can also be good evidence in evaluating the real track-records of the applicants. It should be noted that overly strict requirements can be obstacles for new comers in the market and may eventually undermine sound competition. It is critically important to strike a balance between required qualification and competition.

[Examples of pre-qualification criteria]

- Past cases of undertaking similar projects in terms of scale and technology
- Track records and third-party certifications or testimonials that provide evidence of that past performance

- Good track records and/or representation letter in terms of environmental protection and safety

After pre-qualification, proposals from pre-qualified bidders are submitted and evaluated. Comprehensive evaluation examining both quantitative and qualitative aspects should be undertaken. The technical evaluation should include appropriate criteria that ensure the quality of infrastructure described in Chapter 1. It should also ensure objectivity and transparency to avoid arbitrary or subjective evaluations. As results, the preferred bidder, which has obtained the highest score in the evaluation is determined and publicly announced.

【Example of Evaluation Items: Water Processing Facilities】

Quality Evaluation (50 points)

1. Durability of facilities
2. Schedule
3. Capacity for flexible response to seasonal changes in quality and quantity
4. Flexibility in problem management
5. Feasibility of future extension
6. Stable plant capacities in accordance with guidelines defined by the local government
7. Principles for avoiding financial risks
8. Operator's financial security for the period of construction and operation (financial sources, scope and period of guarantees)
9. Security in combating environmental risks (financial sources, assurance, warranty, etc.)
10. Financial planning
11. Contribution to the local community and the national economy through local procurement, employment and technology transfers
12. Independence against bribery of public servants

LCC Evaluation (current value after risk adjustment) (50 points)

- LCC (including design, construction, operation, renewal fees)
- Adjustment according to risks of the employer

● Contract Closure

It is righteous that the procedure for contract closure commences swiftly after the selection and award of the preferred bidder. In the contract negotiation, changing substantial parts of bidding conditions and specifications presented by the implementing agency in the bidding stage should not be permitted, unless there is an inevitable circumstance, in consideration of fairness and equality among bidders. Given that precondition, it is important to (a) verify the details of proposal with the preferred bidder,

(b) listen to their questions, clarifications, requests and suggestions, and (c) appropriately reflect the results of the discussion in the contract. It is not easy to amend the contract once closed as it may lead to an expensive variation order (VO) and therefore, details of the contract and its provisions should be thoroughly examined at this stage. The contract should be signed after each party fully understands and agrees with the content. Particularly in case of PPP projects, coordination with financial institutions is required and sufficient time should be provided for the thorough completion of necessary procedures.

【Stage Three and Four : Construction, Operation and Maintenance】

- **Project Supervision**

Selecting the private entity and entering into a contract is not the end of the story. Both in conventional procurement and in PPP, the implementing agencies are responsible for supervising the implementation of the project in construction and operation stages to assure the quality of infrastructure and its services. Regular performance reports should be submitted from the private entity to the implementing agencies in charge and the project status should be properly explained and understood. If problems arise, the implementing agencies should provide instructions and guidance to the private entity to remedy the situation as appropriate.

- **Role of Implementing agencies in PPP**

In PPP projects, roles and risks are allocated between the implementing agency and PPP Project Company. Implementing agencies are typically responsible for acquisition of land, coordination between government officials, issuing licenses, and other roles which the private sector cannot fulfill. It is essential for the implementing agencies to take responsibility in these roles while monitoring the performance of private operators.

【Stage Five: Project Completion 】

- **Project succession**

In the case where the operation of the project is entrusted to private operators, ownership of the project assets are transferred from the operator to the implementing agency with appropriate inspection of the condition of the assets. Alternatively, the project facility may be demolished and removed. If the implementing agency decides to entrust the operation to a private entity, sufficient time should be provided to select a successor to the existing operator. The selection process ensures transparency and efforts should be made to realize competition among several candidates.

- **Ex-post evaluation**

At the end of the life of the project, it is important to conduct an ex-post evaluation. It should cover quantitative achievements such as actual LCC and other environmental

effects as well as qualitative achievements such as compliance with or deviation from the original plan and requirements. An ex-post evaluation must be conducted based on the pre-determined items known as Key Performance Indicators (KPIs). The implementing agencies in charge are responsible for conducting the evaluation to extract lessons learned for future projects.

Chapter 3: Expected Initiatives by Governments

3.1 Governance and Project Management Body

The effectiveness of infrastructure projects can be assured only when the government and project implementing agencies demonstrate effective governance. Governance by public agencies affects various aspects of a project such as the scope of work, schedule, service standards, funding, and financial sustainability. Public agencies are required to demonstrate effective governance in identification, preparation, procurement and management of infrastructure projects in line with the economic development strategy and properly stipulated legal framework.

In the stage of identification and preparation, the presence and role of a focal unit is essential for planning appropriate infrastructure development, clear mapping of individual projects in the development plan, and coordination among stakeholders including determination of funding sources. In the case of PPP, it is desirable to establish an inter-ministerial project steering platform with sufficient expertise and capacity in selecting project methods, funding and legal issues including contract management.

In the stage of procurement, sound competition is essential for selecting the best private entity or consortium. This calls for a transparent, non-discriminatory and predictable environment and greater openness to Foreign Direct Investment (FDI) as appropriate.

In the stage of implementing infrastructure projects (construction, operation and maintenance), it is important for the implementing agency to secure sufficient personnel resources, skills, and funds. The management team needs to have technical capabilities, expertise and skills in procurement, financing, evaluation, legal affairs, and contract management. Especially in case of implementing PPP projects, high expertise and experience is essential with respect to operational methods, financing, and contract management.

3.2 Preparation for Mobilizing Private Funds and MDB involvement

Generally speaking, it is extremely important to create PPP enabling environment to attract private investors, including government support, regulatory framework establishment, institutional arrangement, and incentive measures. In PPP projects, investors and financiers are expected to manage various risks such as credit risks of the implementing agency, political risks and demand risks. Also, foreign exchange risks, together with inflation risks, cannot be ignored by foreign entities. It is important to comprehensively

understand these risks at the early stage of the project. Once understood, these risks should be appropriately allocated among the stakeholders to avoid or mitigate the risks in order to enhance the bankability of projects, which will result in achieving VFM. Although the risk allocation depends on political and economic situations of each economy, it is meaningful to research the risk mitigation measures and risk allocation practices of PPP projects in other economies.

MDBs and domestic development financial institutions have the potential to actively participate in infrastructure development through providing loans, equity investment, guaranties, co-financing, and other relevant financing channels.

3.3 Additional considerations for attracting private entities to PPP projects

Private entities participate and/or finance projects after careful assessment of project profitability and risks associated with the target project. Investment decisions are often made by referring to the following indicators:

- Financial Internal Rate of Returns (FIRR)
- Equity Internal Rate of Return (EIRR)
- Net Present Value (NPV)
- Payback Period (PP)

The decision criteria and threshold differ for each project and there is nothing like ballpark figures; FIRR is set at WACC⁴ plus appropriate margin and risk-premium, EIRR is set based on the investment hurdle rate of each company, NPV with risk adjusted discount rate is larger than alternative investment option, and PP is set taking facility durability/longevity, which typically ranges 10 to 20 years, into account.

Private entities require higher margins and shorter PP for participating in projects with higher risk. Consequently, government agencies need to carefully consider risk allocation between public and private entities and also based on anticipated revenue stream. In particular, economies with higher political/economic risks are required to ensure robust revenue streams and provide significant government support including guarantees.

Similarly, private entities participating in their first PPP project in economy that contain various uncertainties require higher returns than subsequent projects with proven track records of PPP projects in the economy. A golden rule of risk allocation is “The risks should be allocated to the party that is best able to manage them”.

3.4 Human Resource Development

Regardless of project methods, human resource development of the government, implementing agencies and local communities are essential to ensuring the quality of infrastructure. It is expected that each economy continuously plan and implement capacity

⁴ Weighted average cost of capital (WACC) is a calculation of a firm's cost of capital in which each category of capital is proportionately weighted.

building of its human resources. In cases where the economy does not have sufficient domestic capacities, cooperation with other economies including capacity development and technology development and transfers are worth considering.