TOD K P

AS-P03

INFRASTRUCTURE ASSESSMENT TERMS OF REFERENCE

Template terms of reference (with estimated consultant time required) to conduct infrastructure analysis

Type: TOR Template

TOD

Global Platform for Sustainable Cities

WORLD BANK GROUP

IBI

BACKGROUND

The Terms of Reference for a Physical and Social Infrastructure Assessment should provide the following background material:

A. **Study Area**: The TOR must define the approximate area for which the Assessment is to be developed. The study area must coincide as far as possible with jurisdictional boundaries for which population and employment data is readily available. The Background should also summarize the transportation and transit services and other details of the TOD Plan.

B. **Existing Development**: The Background section should provide a summarized description of existing development and ongoing activities, including any information on critical infrastructure shortages.

C. **Benchmarks and Guidelines**: The Background section should also provide information on resources that a consultant is expected to refer to while preparing the assessment, specifically including Global or National Benchmarks or Guidelines.

D. **Bibliography of Reference Plans, Polices and Studies**

E. **List of Project Stakeholders**

OBJECTIVE OF THE ASSIGNMENT

The objective of this assignment is to undertake a capacity and needs assessment for various Infrastructure services including but not limited to physical infrastructure such as water supply, electricity provision, solid waste management, sewerage treatment, sidewalks, bike lanes, landscape infrastructure and information systems; and social infrastructure such as education facilities, healthcare facilities, recreational and community facilities. The intended outcome of the assignment is a Feasibility Report that recommends a clear plan for construction, management, rehabilitation, or augmentation of infrastructure services as per the Client's requirements in a clear and predictable manner with a view to ensuring:

(i) efficient, economical, and integrated systems or schemes;

(ii) reliability and security of services to all of the population equitably;

(iii) efficient operation and maintenance of the systems/schemes;

(iv) minimal adverse impact on the local population and environment;

(v) minimal additional acquisition of land;

(vi) improving the financial viability of the TOD Project consistent with the need to minimize disruptions to services provided to existing populations and to eliminate constraints in a cost effective manner; and

(vii) phased development of the Project on techno-economic considerations, till the final year of TOD implementation

SCOPE OF ACTIVITIES

The scope of activities for the infrastructure assessment is described in this section. The proposer is encouraged to provide suggested refinements to the work plan and schedule based upon experience with similar studies, and in compliance with national and state policies, where applicable.

1. **Project Initiation and Development of Methodology:** The selected Consultant will schedule a kick-off meeting with the Client's project management team and identify relevant issues for the capacity and needs assessment process based upon a review of existing documents and existing conditions. A tour of the project area may also be included in the initial or follow-up meeting. The proposer will synthesize relevant issues and critical needs and identify how these issues are to be addressed in the work plan, including potential refinements to the work plan. The Consultant will also review and refine the initial problem statement, goals, and objectives and define key infrastructure services for which the study will be carried out. The Consultant will prepare a basic assessment of study needs for each of the infrastructure service defined, and propose factors to be used for each of the study methodologies, including population forecasts or similar. The methodologies should consider factors in a manner that they capture the demographics in different distribution and collection zones, as the case may be, of the Project Area. The problem statement, goals, objectives, study needs and methods should be submitted as part of the Inception Report.

    a. Client responsibility: Identify key stakeholders and assist in coordinating schedules for kick-off meeting.

    b. Deliverables: Inception Report including problem statement, goals, objectives, study needs and methods.

2. **Develop population forecast and assessment of demand:** The horizon years for the population forecast should be set at approximately 10 and 20 years from the year of study, aligned as far as possible to parallel Master Plans or Development Plans. The Consultant shall determine the extent of the area for which new infrastructure or augmentation needs to be planned. For the present and prospective area to be served by the infrastructure systems, the Consultant shall also review the past records of population growth to forecast the population by using the methodologies and factors determined under Task 1. These population forecasts shall be compared with any other study(s) conducted by any other agency with a view to recommending the population forecast for adoption in the two planning horizons. The Consultant shall also assign suitable population densities for different zones/ sections/ areas as per the TOD Plan for assessing the infrastructure demand. The Consultant shall calculate the demand using national standards for per capita or per household needs. If such data does not exist, the Consultant may use global standards from countries of comparative economies and validate it through a small sample survey of actual consumption or production and demand for different purposes. Based on the forecasts of aggregate demand for physical infrastructure such as water, electricity and waste management, and social infrastructure such as education and healthcare, and the topographical and existing developmental features of the Project Area, the Consultant shall recommend suitable sub-divisions to formulate distribution/collection zones for each infrastructure need.

    a. Client responsibility: Provide access to population data, previous plans, policies and studies.

    b. Deliverables: Technical memorandum summarizing existing and projected infrastructure demands.

3. **Assessment on the sufficiency of existing physical infrastructure capacities (not required for greenfield context):** The Consultant shall review the existing reports prepared by the relevant public infrastructure departments with the intent to evaluate the existing infrastructure capacities. The Consultant will be expected to meet stakeholders from relevant agencies to identify if the current infrastructural capacities are sufficient for the projected needs, and if not, how much of the excess need can be fulfilled through pre-existing augmentation plans.

    a. Client responsibility: Sharing existing reports and facilitation of stakeholder meetings.

    b. Deliverable: Technical memorandum summarizing sufficiency of capacity of existing and planned systems.

4. **Identify Land and Resource Capability of the Project Area:** The Consultant will evaluate area-specific land and resource constraints that are a barrier in meeting the projected demand, primarily related to availability of land and resources. Examples of critical constraints include:

    a. Water Supply: Water shortage, if any, due to insufficient rainfall or depleting ground water reserves.

    b. Electricity: Shortage of renewable sources to harness for power, or shortage of land to establish distribution centers.

    c. Sewerage or Solid Waste Management: Shortage of land to establish treatment centers or landfills.

    d. Landscape Infrastructure: Shortage of land or soil fertility to develop landscape infrastructure

    e. Information Infrastructure: Lack of means to distribute information and real-time data efficiently.

    f. Social infrastructure such as schools or hospitals or police centers: Shortage of public land to build necessary developments.

    In areas of constraint, the Consultant will evaluate potential strategies to increase resource availability where possible. For example, the Consultant may identify land amalgamation or acquisition needs to fulfill land demands, or identify water recharge strategies to augment ground water reserves. If the constraints are too large and cannot be overcome through any means, the Consultant may be required to suggest changes to suggested population forecasts or planned densities.

    a. Client responsibility: Input and guidance.

    b. Deliverable: Technical memorandum summarizing the current land and resource constraints and potential strategies to overcome them.

5. **Identify Strategies and Mechanisms to Reduce Consumption:** The Consultant will also define strategies for reducing consumption where possible. In cases where larger developments of high density are proposed, it is possible to leverage the potential of resource sharing and thereby reducing overall demand. For example, larger developments may be able to accommodate grey water recycling plants to meet all non-domestic needs, or they may be able to install smart meters to monitor and reduce electricity consumption. The Consultant will recommend statutory and regulatory mechanisms or financial incentives that can be implemented to reduce consumption.

    a. Client responsibility: Input and guidance.

    b. Deliverable: Technical memorandum describing statutory, regulatory, or financial incentives to reduce consumption.

6. **Prepare indicative designs and layout plans for development or rehabilitation of physical infrastructure:** The Consultant will prepare conceptual layouts for any new infrastructure proposed, including central facilities and distribution systems. The Consultant should also prepare conceptual designs for the rehabilitation of facilities of augmentation of networks where applicable. In addition, the Consultant will also be required to prepare design guidelines for decentralized physical infrastructure systems, where appropriate (e.g. recycled water system, waste segregation and composting center, minor solar installations). National standards or global best practices must be followed in design preparation.

    a. Client responsibility: Input and guidance.

    b. Deliverable: Technical memorandum describing indicative designs and layout plans and guidelines.

7. **Conduct Social and Environmental Impact Assessment (including impacts of land acquisitions, etc):** The Consultant will prepare a social and environmental impact assessment to document the possible impact of building or enhancing infrastructure systems on the local population and environment in the short, mid and long term. In particular, social impact of any displacement due to land acquisition, and environmental impact of building large facilities or landfills shall be studied. The Consultant should work alongside the Client to propose strategies to mitigate impacts as far as possible.

    a. Client responsibility: Input and guidance.

    b. Deliverable: Social and Environmental Impact Assessment Reports, including summaries of Tasks 2 to 6.

8. **Prepare capital cost and operating and maintenance cost estimates:** The Consultant will prepare capital cost estimates and operating and maintenance costs based on the layout plans and designs proposed in Task 6. Cost estimates will be prepared utilizing up-to-date unit costs. Unit costs will be adjusted to the targeted year-of-opening based on anticipated annual inflation rates. Costs will include land acquisition costs, land clearing costs, facility construction costs, laying of pipelines or conduits along roadways, vehicles, maintenance facility construction, modifications to existing facilities, project development/design, and project administration. Costs of financial incentives will also be included in the estimates.

    a. Client responsibility: Share knowledge of existing infrastructure and utility construction costs.

    b. Deliverable: Technical memorandum documenting capital and operating and maintenance cost estimates and methodology.

9. **Prepare Final Infrastructure Assessment and Feasibility Report:** The Consultant will summarize the entire assessment and cost estimation process in the Final Infrastructure Assessment and Feasibility Report.

    a. Deliverable: Final Infrastructure Assessment and Feasibility Report

DELIVERABLES

TASK	DELIVERABLE	TIMELINE
1	**Inception Report** including problem statement, goals, objectives, study needs and methods	M + 2 weeks
2	Memo #1: Existing and projected infrastructure demands	M + 1 months
3	Memo #2: Sufficiency of capacity of existing and planned systems	M + 1 months
4	Memo #3: Current land and resource constraints and potential strategies to overcome them.	M + 2 months
5	Memo #4: Recommended statutory, regulatory, or financial incentives to reduce consumption	M + 4 months
6	Memo #5: Indicative designs and layout plans and guidelines	M + 4 months
7	Social and Environmental Impact Assessment Report	M + 5 months
8	Memo #6: Summary of capital and operating and maintenance cost estimates and methodology	M + 6 months
9	Draft Infrastructure Assessment and Feasibility Report	M + 7 months
10	Final Infrastructure Assessment and Feasibility Report	M + 8 months

QUALIFICATION OF CONSULTANTS

The Consultant Team must have experience in at least:

A. One similar Infrastructure Assessment Study

OR

B. At least two studies or project reports which included at least two of the following components: Infrastructure Demand Assessment, Resource Capability Assessment, Social and Environmental Impact Assessment of Infrastructure Plans

OR

C. At least two Infrastructure Feasibility Studies

The Consultant Team must include the following key expertise:

	Key Experts	Year of Experience
1	Project Manager and Senior Infrastructure Planner	15 years
2	Physical Infrastructure Specialist	5-10 years
2	Urban Planner	5-10 years
3	Municipal Infrastructure Engineer	5-10 years
4	Environmental Planner	5-10 years
5	Social Safeguard Specialist	5-10 years
6	Municipal Finance Specialist	5-10 years

Curitiba, Brazil