

TERMS OF REFERENCE (TORs)



FEASIBILITY STUDY FOR SETTING UP OF MARITIME SCIENCE & TECHNOLOGY PARK (MSTP)

Terms of Reference (ToRs)

Pakistan Maritime Science and Technology Park (MSTP) has one simple goal – to transform Pakistan into the regional hub for innovation and technology development especially in Maritime sector. MSTP should be a tech-based ecosystem that connects stakeholders, nurtures talent, facilitates collaboration, and drives innovation to commercialization. MSTP should provide support services to maritime, science and technology companies to nurture ideas, innovate and grow. It should provide a good ecosystem for knowledge transfer, business collaboration and ideas generation. MSTP should focus on those technology applications platforms that have the potential to transform Pakistan into a center of tech innovation and allow local talents to contribute to the society especially in the maritime sector. The Feasibility Study is to generally cover the following aspects:

1. Background Research.

The Consultant should determine already established Science and Technology Parks (STP) and their impact on socio-economic development. In this regard, the Consultant must identify the impact of absence of Maritime Science & Technology Park (MSTP) on Pakistan's maritime sector and economy. The Consultant is also required to conduct a need-benefit analysis of establishing the MSTP in Karachi and identify potential impact on economic growth. This task also involves identifying potential tenants from various sectors that can benefit from locating their businesses in the proposed MSTP building. The Consultant is also required to conduct a detailed benchmarking exercise, study local/ regional/ international MSTPs and identify critical success/failure factors. The Consultant must be aware of the Government's relevant legislation(s), science, technology and industry policy initiatives, instruments and incentives, as well as Governmental public budget finance and project analysis. This task shall entail conducting relevant surveys.

2. Need Analysis.

The Consultant is required to carry out a need analysis study that includes and is not limited to the following; any additional areas which are considered essential may also be included:

- a. Evaluate the resources required for development/implementation of the MSTP.
- b. Conduct a detailed assessment of the Client's institutional capacity to provide the services that the MSTP will need to offer to its potential clients and to propose the optimal arrangement and structure to ensure the seamless provision of such services:
 - (1) In this context, the Consultant shall be required to assess the on-ground situation and hold in-depth interviews/discussions with key stakeholders in maritime sector and also at Bahria University (BU) including relevant departments and MSTP Committees.
 - (2) In this context, the Consultant would be required to critically assess the existing Technology Incubator Centers (TICs) set up in country and at BU and give a detailed mechanism and methodology for its integration with the MSTP.
- c. **The Need Analysis should also include identification of;**

- (1) Significant assets which will be used for the Program (such as land and equipment). Parking Area of Bahria Auditorium, Karachi to be particularly focused for MSTP building.
- (2) How the Program will complement other developments taking place in the area through review of sector master plans/studies.

3. Identification of Critical Prerequisites.

a. The Consultant is required to carry out a detailed assessment of all the critical prerequisites that need to be in place to ensure Program viability. This includes, but is not limited to, identifying essential technological, legal and policy framework. Legal aspects include applicable/relevant legislations, tax laws, etc. The Consultant must ensure that legal aspects pertaining to development and implementation of the Program are identified, studied and addressed.

b. The Consultant should consider MSTP as a “living laboratory” where the buildings are designed on sustainability principles and make use of three key design principles of reduction, efficiency and generation, to encourage smarter use of resources and a greener lifestyle at workplace as per US LEED rating system.

4. Phase-Wise Development Plan.

a. The overall development of MSTP is envisioned to be carried out in phases spanning over a period of 3-5 years. This phase-wise construction is envisaged to involve consolidation of existing facilities (such as Bahria Auditorium, Karachi) as well as construction of new infrastructure to accommodate start-ups as well as mature companies from different sectors. This arrangement will provide requisite momentum to the project, while capitalizing on the existing areas of expertise available within country (especially Karachi).

b. The Consultant shall be required to prepare a complete **Phase-Wise Development Plan** as per the stipulated timeframe along with a detailed **Program Implementation and Execution Plan** for the MSTP.

5. Identification of Potential Areas/Sectors for MSTP.

S #	AREAS	PROPOSED PROJECT OBJECTIVES			
		3 years	5 years	8 years	10 years
a.	Energy resources/production	Evaluate energy potential from sea coast of Pakistan	Set up company for energy exploration / development	Start energy production on limited scale from marine sources	Full scale commercial operations
b.	Offshore/Onshore Marine Structures	Develop capabilities in design/ construction (with assistance of	Set up local company and take contracts in country for marine structures	Company to achieve/ complete marine structures	Company to participate in international tenders/ contracts

		foreign company/ services)			
c.	Coastal Development	Undertake feasibilities of tourism at sea and coast of Pakistan	Setting up of tourism companies/ ventures	Develop leading tourism area of the country	Develop into leading tourism area of the region
d.	Fishing	Study fishing potential/ challenging/ solutions	50 % increase in fish stocks/exports	100% increase in fish stocks/ exports	200% increase in fish stocks/ exports
e.	Design construction of boats/vessels/ complete ships	Undertake feasibility studies /determine potential areas	Set up design and construction companies/ facilities	All small boats/ vessels to be made in country	Construction of large vessels for domestic and international need/market
f.	Sea bed resources exploration /exploitation in Pakistan EEZ	Undertake feasibility studies/ determine potential	Setup companies/ facilities	Start commercial operations	Full scae operations
g.	Shipping	Undertake feasibility studies/ determine potential	50% increase in Pakistan owned ships	100% increase in Pakistan owned ships	200% increase in Pakistan owned ships
h.	Any other area				

a. Based on earlier consultations with prospective tenants, business entities (tenants) following Sectors can have a presence in the initial phase of the establishment of the MSTP;

- (1) Shipping Agencies
- (2) Ship architecture including ship construction*
- (3) Fish processing and Fishing companies
- (4) Bio-technology
- (5) Information and Communications Technology
- (6) Energy
- (7) Minerals and Chemicals.

(* Ship Construction/Manufacturing Sector is vital for the economic growth of Pakistan. Development of hi-tech industry is imperative for Pakistan's economic progress. One of main objectives for developing the MSTP is to stimulate innovation and generate economic benefits by assisting knowledge-based firms and knowledge intensive activities in this sector.)

b. Established Concerns as well as Incubate / Start-up companies in the above-mentioned sectors to be housed in the MSTP during the initial phase.

c. The Consultant shall be required to reconfirm earlier findings/consultations and will need to carry out a detailed market analysis including survey of local Industry in the above mentioned Sectors (including list and size of industrial sector/sub-sectors, the number of private/public/mixed companies per Sector). This survey should include current trends and technologies, R&D (applied and basic research), education programs, innovations, and future trends and developments in the area. Based on this survey, the Consultant shall be required to give a detailed analysis of the above-mentioned proposed sectors and any other sectors the Consultant deems suitable (based upon his findings and keeping in view market demand/potential) to be included in the initial as well as subsequent phases of the Program. The survey should also assess the possibility of establishing linkages between enterprises located in the MSTP with other businesses and institutes of learning in the area.

d. The market analysis should help determine the kind of potential clients/tenants that could be housed in MSTP, what kind of goods and services shall be provided by these firms and the potential markets for such goods and services. This analysis should also estimate likely scenarios of occupancy/tenancy by clients, thereby estimating the likely operating income stream to be used in preparing financial model.

6. **MSTP-Space Allocation, Design and Architecture.**

a. The Consultant is required to incorporate in the Feasibility Report, a detailed analysis of the adequacy of the allocated land, keeping in view its phase-wise expansion.

b. The Consultant should develop specifications regarding the architecture and design of the MSTP and resultantly furnish a conceptual design of the infrastructure in the Feasibility Report as per US LEED rating system/specifications.

c. The Consultant should identify critical ICT infrastructure and equipment requirements, resulting capital expenditure and operating costs.

d. Indoor furnishings and basic amenities: some facilities in the MSTP infrastructure will be shared (as mentioned in next para). The Consultant should identify requirements of furniture and other basic amenities for these facilities, and should also provide cost details of the same.

7. **Proposed Features/Services Offered in the MSTP**

The MSTP is envisioned to offer a range of services for business tenants (legal, Venture Capital firms, accounting and consulting and marketing) to support all stages of growth. This includes:

a. Business Advisory Support, mentoring, networking, management, incubation and business acceleration services, IP Protection, legal services, etc.

b. Facilitate access to capital either through investors or VC firms housed or are members of the MSTP.

c. Training and facilitate access to skills through a combination of education and training providers onsite and links to local education institutions, Industry training organizations, etc.

d. Facilitate access to markets through active Industrial linkages.

e. Provision of amenities such as conference/seminar halls, cafeterias, tele-presence & video conferencing facilities, access to state-of-the art research laboratories, etc.

f. Residential/housing and recreational facilities.

The Consultant shall be required to give a detailed analysis of proposed features/ services and also suggest other facilities that may be required by the tenants and university researchers to accelerate the commercialization of University Innovation.

8. **Desired Outputs, Outcomes, Success Indicators & Risk Factors.**

The Consultant is required to identify desired Outputs, Outcomes, Success Indicators & Risk Factors and suggest/identify suitable strategy to make MSTP self-sustaining.

9. **Management/Governance Structure during Project Construction/ Execution and Operations**

The **MSTP Managing Committee**, will be chaired by Rector BU. The Consultant shall be required to prepare a detailed Organizational/Management Structure. This structure must clearly delineate reporting lines and interrelationships between key stakeholders.

10. **Human Resource Requirement and Induction Plan.**

The Consultant is required to prepare a Human Resource Requirement and Induction Plan in line with the operational model approved by the Client for the MSTP. This Human Resource Requirement and Induction Plan should include but is not limited to:

- a. Phased HR Induction Plan based on MSTP occupancy rate/growth.
- b. Define respective roles & relationships of the personnel to the university, Government, or tenants.
- c. Qualification of required HR.
- d. Remuneration packages.

11. **MSTP - A Green Initiative.**

The MSTP is envisaged as a green initiative (US LEED rating system). The Consultant should suggest in the Feasibility Report energy efficiency measures in the MSTP architecture, alternate/ renewable means of energy provision.

12. **Environmental Impact Assessment.**

The Consultant will be required to conduct an Environmental Impact Assessment of the Program and compatibility with both local regulations and the requirements of potential donor agencies and potential tenants. The Consultant needs to evaluate as to how any potential significant negative impacts can be minimized, identify stakeholders' expectations, priorities, opportunities, and trends.

13. **Financing/Investment Options for MSTP.**

The Consultant shall be required to prepare and present different financing/investment options for the MSTP. These options can include, but are not limited to investment based on a PPP-BOT modality, JV/land leasing options with developers/qualifying companies, combination of loan/grant from national/ international financial institutions, grant from GoP etc. The Consultant shall recommend to the Client, the most optimal method of

financing the Program based on a sustainable business model and supported by a detailed financial model.

14. **Financial Study.**

a. The Consultant is required to propose and recommend a **Business Model** for the Program. The model must be designed with the objective of ensuring financial soundness and sustainability of the Program. In developing the business model the consultant is expected to review the successful business models of the existing MSTP's in the world especially in countries similar to Pakistan as well as similar or related initiatives within Pakistan.

b. Based on the business model, the consultant is required to prepare a detailed financial model of the program. The consultant is also required to identify the viability gap funding, if required, to make this program commercially viable and also show the relevant financial indicators for the investors under PPP.

c. The financial model shall include but is not limited to the following:

- (1) Revenues of the Program including all direct and other revenues.
- (2) All costs of the Program differentiating between fixed and variable costs and direct and indirect costs.
- (3) Assumptions of the model.
- (4) Option function in the model (scenario analysis).
- (5) Sensitivity analysis including consideration of risks mentioned below.
- (6) The Consultant is required to construct a risk matrix so it can be integrated with the construction of the financial model. It involves the following inter-related stages;
 - (a) Identifying risks* involved in the Program.
 - (b) Assessing the impact of these risks.
 - (c) Assessing the likelihood of these risks.
 - (d) Calculating the impact of risk (and ranges of possible outcomes).
 - (e) Allocating risks to party best able to manage risk.
 - (f) Identifying strategies for mitigating/managing risk.

*(*Some risks to be considered are "Program Related Risks" (including but not limited to; completion risk, operational performance risk, market risk, financial risk, environmental risk) and "Non-Program Related Risks", (including but not limited to political risk, contractual [regulatory] risks, macroeconomic environment, legal environment etc.)*

(7) The cost estimates & comprehensive financial plan shall be prepared keeping in view the phase-wise development of the MSTP. The financial model shall include but is not limited to the following financial indicators:

- (a) Return on Investment (financial, economic & social returns)
- (b) Net Present Value
- (c) Internal Rate of Return
- (d) Break-Even Analysis
- (e) Payback Period
- (f) Economic rate of return

15. **Economic Assessment.**

The Consultant is required to assess the possible benefits and costs of the MSTP to the society as a whole based on "with" and "without" Program. The Consultant is required to:

- a. Determine the economic costs of the project (investment cost and operating cost) derived from the financial costs.
- b. Undertake calculation of Economic Internal Rate of Return (EIRR) and Economic Net Present Value (ENPV).
- c. Determine major assumptions to be applied to the economic analysis and estimate expected economic benefits to be generated from the Program such as increase in employment generation, etc.

16. **Governance Structure.**

Options for governance depend on how the Program is funded. Based on the recommended mode of funding, the Consultant shall accordingly prepare an optimized and performance based governance structure for the MSTP.

17. **Demonstrate Program Viability.**

Based on the above, the Consultant is required to assess Program viability taking into account if the Program is;

- a. Technically deliverable.
- b. Affordable to users.
- c. Economically viable.
- d. Financially viable to the Client and potential investors.
- e. Socially and environmentally sustainable.

18. **Verify Information and Sign-Off.**

The Consultant must ensure that all information used in the Feasibility study is as accurate and verified as possible. This will include:

- a. A statement from all stakeholders on the reasonableness of the information collected and the process by which the information was collected.
- b. A description of how the assumptions used in constructing the financial model are realistic and appropriate, taking into account past practice, performance, current practice and anticipated future developments. In this context, the financial model prepared by the Consultant shall be required to be audited independently
- c. A record of the methodologies used for valuing various costs, including the costs of key risks.
- d. Ensuring that all the inputs into the feasibility study are signed off as accurate and verified by the Consultant.
- d. Once this information verification and sign off has been completed the approval process must be completed in accordance with applicable law.

