

Terms of Reference (ToR)

FEASIBILITY STUDY OF TECHNOLOGY CENTRES FOR LIGHT (GENERAL) ENGINEERING SECTOR IN BANGLADESH

Package no. S 29

1.0 Project Background

The Project *Export Competitiveness for Jobs* is designed on request from the Economic Relations Division (ERD), Ministry of Finance, Government of Bangladesh, with the objective of strengthening competitiveness and increasing investment and employment in some priority sectors such as Leather & Leather Goods, Footwear (leather & non-leather), Light Manufacturing, etc.) and Plastics. The Project is expected to directly contribute to the Government of Bangladesh's policy objective of diversifying exports beyond ready-made garments (RMG). However, the mentioned priority sectors face a number of interrelated capability barriers including lack of awareness and access to modern technology and production processes; lack of skilled workforce, lack of access to testing, accreditation and certification bodies for local and international product standards and conformance infrastructure; poorly developed business advisory services and weak local supply chains. This, in addition to challenges in accessing finance, and lack of awareness of good international management and production practices, will potentially lock Bangladesh's manufacturing sector into low technology/low value added/price dependent business models and domestic markets.

The Project has been approved by the World Bank and the Government of Bangladesh and implementation has already started.

The Project plans to establish three technology centres in Dhaka and Chittagong to address the technology awareness and utilization barriers, and skills gaps across the targeted subsectors in Light (General) Engineering sector. Specific subsectors under focus in this feasibility study includes Electronics & Electrical Goods, Bicycle, Automobile, Accumulator & Battery, and Plastics.

The technology centres will be established and run using a Public Private Partnership model, in close partnership with key industry associations. It will have a number of roles to play. It would house modern manufacturing equipment and processes for training, testing, demonstration and product design and development purposes. Workforce training would be provided on new production technologies and processes (a key potential revenue source for the Centre). The target market will be both SMEs and large sized businesses depending on the specific subsector needs, and strategies driving the overarching initiative. The centres will address cross cutting issues (e.g. design, mold and dye making, casting, fabrication, testing and calibration services, waste management/recycling etc.). Services may include, but not limited to:

- i. Technology demonstration and use – housing modern manufacturing equipment and processes, and providing their access to SMEs for demonstration and use (e.g. for small batches);
- ii. Address the skills gaps by providing hands-on training to the technical workforce on new production technologies and processes;
- iii. Business advisory services – including production and technology upgradation, product design, improvement of social and environmental compliance, change management, improvement of financial and administrative management, etc.;
- iv. Internationally accredited machinery, product and component testing and certification services (another potential revenue source);
- v. Supply chain and market development services.

The Project now intends to hire a consulting firm to carry out feasibility assessment for the development of the technology centres to offer the critical services required by the General Engineering services for the intended product sectors. During the project preparation, a pre-feasibility assessment was conducted and the feasibility may build on the findings from that assessment.

2.0 Objectives of the Assignment

The objective of the assignment is to conduct a feasibility assessment for the establishment of three technology centres that will facilitate access to various advanced technology and business services which in turn will drive productivity enhancement, skills formation, improvement of product quality, and environmental and social compliance of the specific subsectors of General Engineering.

3.0 Scope of Work

The scope of work will include, but not limited to, the following tasks:

- I. Identify the key manufacturing processes and technologies
 - a. Identify the key manufacturing processes of the following product sectors/ sub-sectors to identify gaps in technology and know-how, production processes, skills, social and environmental compliance, and recommend potential services to be provided by the technology centres to the following subsectors:
 - i. Electronics & Electrical Goods including Accumulator & Battery
 - ii. Automobile and bicycle
 - iii. Plastics
 - b. Assess the current usage of technology and related management practices compared with the regional and global benchmarks for similar industries, and identify the gaps in order to improve product quality and compliance standards for accessing export markets;
 - c. Understand the industry's current and future (10-12 years down the line) needs: extract the current critical needs through a deeper engagement with industry leaders and other stakeholders;
 - d. Recommend specific technologies/machineries based on critical industry needs based on clusters (one technology centre cannot offer all required services), reflecting both immediate needs, and also the likely future technology upgrades that the Centre should plan to make over the next 10 – 12 years as industry capabilities improve. Indicate the multiple reliable sources of procurement of those technologies;
 - e. Indicate per unit costs of technologies/machineries together with installation and other relevant costs for the technology centre, and provide an estimated amount of total investment required to establish it;
 - f. Identify obvious opportunities to build local supply chain links between large firms and SMEs to be integrated with global value chains within the targeted subsectors.
- II. Services to be provided from the technology centres: Identify the most critical services needed by specific subsectors as mentioned above, and provide up to three options with a final recommendation of one for the best mix of services to be provided by the Centre, taking into account industry needs (both existing and emerging), business model requirements (that the Centre be financially self-sufficient within five years of establishment), available funding and resources, and the relative degree of difficulty in establishing new services. These options should include sequencing of recommendations if services to be provided at different points of the development of the Centres.

It is anticipated that this will also include functional and strategic partnership(s) with globally reputed and relevant service providers to ensure the Centre has access to internationally recognized, world class skills and technology on an ongoing basis. These options should include sequencing suggestions if services are to be established at different stages of the development of the Centre. Services may include:

 - a. Mold & dye making and foundry
 - b. Testing - advise on the testing services the Centre should provide that are unlikely to be provided by the market:

- i. testing services that will be most relevant immediately for the industry with particular attention to export markets;
 - ii. testing services that are most likely to be needed in the future as the export sector develops (based on the experience of other emerging markets) that the Centre may develop later;
 - iii. expected costs for establishing these services (. e.g. equipment, technical expertise with an indication of potential procurement sources, etc.);
 - iv. training and accreditation needs for these potential services.
 - c. Heat treatment
 - d. Calibration and trouble shooting
 - e. Training – advise on range of potential training offerings that are most relevant to the industry:
 - i. Undertake a needs assessment to ascertain immediate needs, and longer-term needs, and assess both existing supply and potential for future supply across the relevant production stages;
 - ii. This should cover the potential needs of shop floor workers, supervisory staff and middle management;
 - iii. Recommend priority areas for provision of training; business models around those trainings (cost, potential volumes) and technology requirements (e.g. do they need equipment to train on, etc.);
 - iv. Types of staff needed to support this offering, including training and accreditation needs to establish and run trainings, and level of staff competence.
 - f. Advisory services:
 - i. Outline what potential other services could be provided that would enhance the upgrading of industry. These may include, for example, auditing – ISO 9000/14000; productivity audits and advisory services (stock management, equipment usage, layout, lean manufacturing, occupational health and safety), digital integration, equipment calibration, sourcing; innovation and R&D support; industry intelligence and information; product design services – designing & pattern making, CAD / CAM, sample development, prototyping, etc.;
 - ii. Identify the services likely to be sustainable financially, versus their potential impact on industry upgrading and export performance, and the likelihood that the private market may develop during the project life;
 - iii. Infrastructure needs for the provision of these services (or which can leverage equipment and capabilities that will be in place within the Centres for testing/training);
 - iv. Types of human resources needed to support this offering, and the level of staff competence.
 - g. Assess the business services relevant to the targeted sectors currently offered by key institutions; quality of services and the pricing structure and identify gaps that should potentially be filled by centres. Outline the best ways to deliver these services in terms of the services-mix and sectors to be offered in the same location;
 - h. Assess the relevant local training institutions and training service providers, and their capacity and capability to deliver appropriate/relevant training to fill the skills gap. Identify gaps that should potentially be filled by the centres.

III. Given the granularity of the General Engineering sector, and the number of potential subsectors to be supported by the Project/technology centres, a product-centric approach within

the targeted subsectors might make better sense in terms of: (a) not spreading resources too thin across many subsectors, and (b) ensuring focused interventions to generate desired results.

From this perspective, the Consultant will require to identify: (a) products that are currently being exported from the targeted subsectors; (b) products that have high potential for export with some support from the Project, including their potential markets. Based on engagements with the industry associations/business leaders, and a market analysis, recommend a number of products that should be supported either to enter the export market or to accelerate the current exports.

III. In addition to the specialist expertise to be identified, recommend other human resources that will be required to establish and operate the technology centres, along with software and systems required to efficiently operate the establishment.

IV. While Public Private Partnership in close collaboration with key industry associations is the desired business model, the Consultant is expected to take a very objective view from both demand and supply side in defining provision of services in order to avoid any potential “capture” by either side from a narrow set of interests that may compromise with the broader purpose of the establishment of the technology centres.

V. Assess the proposed locations of the technology centres from access, utilization and sustainability perspectives, and recommend if any particular supportive activities are required to optimize feasibility of the location.

VI. Drawing on the above work, develop options for a bankable business plan and elaborate institutional model (ownership, governance structure, public-private partnership modality as a not-for-profit entity, etc.) for the establishment of the technology centres, including capital requirements, operating costs, revenue streams, and returns on investment from a sustainability perspective; the modality and roles of public and private sector in governance and management of the Centres as well as opportunities and risks thereof. The Consultant is expected to build on experience of such technology centres in a relatively similar socio-economic setting.

VII. The Consultant will recommend the activities that should be started in the interim period before the physical infrastructures of the centres are ready such as training and capacity building of key operational team. Finally, the Consultant will work out an institutional set up to be agreed upon by the PIU and partners that can be readily put to action.

VIII. Project the potential outcomes and impacts of the proposed technology centre in terms of resource efficiency, product quality and compliance on client companies, and overall export growth based on the business model options.

4.0 Planning and Carrying Out of Feasibility Assessments

The overall methodology should include both quantitative and qualitative approach. While there will be no specific number of interviews required, which will depend on the Consultant’s methodology and the number of players in the specific subsectors, it is expected that interviews will be conducted with a wide range of stakeholders representing all nodes in the sector/subsector value chains including:

- i. Selection of firms from targeted sectors representing all nodes of the sector value chains and including larger firms as well as SMEs. However, particular emphasis should be given on the production/manufacturing node;
- ii. Industry associations;
- iii. Key government ministries (e.g. Ministry of Commerce, Ministry of Industries, Ministry of Environment and Forests, Ministry of Labor and Employment, etc.) and institutions/agencies: education and vocational training; SME Foundation; investment promotion; economic zones agency; etc.;
- iv. Other key non-governmental stakeholders, where relevant – e.g. chambers of commerce, development partners, academia, etc.

However, while designing the methodology/instruments for assessment, emphasis should be given on **an in-depth understanding of the demand side from the private sector actors** which should drive the sustainability of this Technology Centre.

The final decision on the selected firms for interviews will be agreed upon by the Consultant and the Project team in collaboration with the industry association/s, and will build on the information base and consultations already undertaken by the project.

The Consultant will be responsible for orientation and training of the assessment team, and indicate how they intend to ensure quality control in the whole process.

5.0 Conducting Key Informant Interviews (KII) and Focus Group Discussions with Key Stakeholders

The Consultant will be expected to capture additional qualitative information by conducting semi-structured interviews with industry champions, business managers and key stakeholders in the sectors in order to understand in more detail the current situation with respect to needs for and constraints to accessing services mentioned above by the enterprises. A summary of key take-away from the KIIs should be well-documented. In this context, the Consultant should clearly articulate the areas (e.g., market failure, viability, funding need, etc.) where the public sector has, indeed, a role to play, and how this role could be incrementally reduced after the establishment of the Centre to render it a truly market-driven model.

6.0 Timing

The contract is expected to run **from December 2018 through June 2019**.

7.0 Deliverables

The Consultant would be expected to submit to the Client several deliverables during the assignment period:

- i. *Brief Inception Report* with an outline of the methodology and work plan for field based activities, including the list of planned interviews for the feasibility assessment within two weeks of commencement of services.
- ii. *First Draft of the Report*. The first draft will include all aspects as envisaged in the scope of work to be delivered in eight weeks after commencement of the assignment. The report should include, in particular: a. assessment of the current usage of technology in the targeted sectors compared with the regional and global benchmarks for similar industries and identify the gaps; b. feasibility of the proposed locations for the Technology Centres, including services to be delivered by the centres and equipment required; c. estimated investment requirement, in detail breakdown, for fully installed Technology Centres as stipulated above; d. details of a bankable business plan and institutional model of the Technology Centre.
- iii. *Dissemination of the results*. The consultant will prepare a PPT presentation packaging the key finding/observations, and the key elements of the business and institutional model of the Technology Centre including key recommendations. The Consultant will present this to an in-country validation workshop to validate the findings and seek feedback from stakeholders.
- iv. *Final Draft of the Report*. The final draft will take into account comments and feedback from the validation workshop and internal review and feedback from the Project team within two weeks from the completion of the in-country workshop.

The deliverables shall be written in English and submitted for approval to the Project Implementation Unit.

8.0 Consulting Firm Capabilities

The Consultant should have strong international capabilities in and proven track record of carrying out feasibility assessment/establishing similar technology centres and their operational aspects including the institutional set-up. The Consultant must also have demonstrated expertise in the targeted subsectors within the General Engineering sector/ subsectors. The Consultant may choose to carry out the feasibility assessment using its own organizational resources, or to partner with a local or international firm/s. Partnerships between international and local firms combining multi-dimensional technical expertise and experience of establishing technology centres per the requirement of the Scope of Work is strongly encouraged. It is important to demonstrate that the high level of technical/subject matter expertise along with local knowledge, and language capabilities are available. It is highly recommended that the proposed team has strong presence on the ground during the execution of the assignment to ensure effective and efficient coordination with the Project team.
