



WWF-Myanmar
15/C, Than Taman Street,
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www.wwf.org.mm

Term of Reference

Consultancy Assignment

Consultant for Capacity Building on Wind Power Project Cost Analysis

Supervised by: Pyae Phyoe Aung, Senior Energy Program Officer

Work location: MoEE Training School, Nay Pyi Taw, Myanmar

Duration: 22 October 2019 to 31 January 2019

1. Background of consultancy assignment/ project

Myanmar has a high potential to generate electricity from renewable energy sources like solar and wind. MoEE needs capacity building, technical qualifications, and technical tools to design, implement, monitor and evaluate RE programs.

Embassy of Denmark in Myanmar and Ministry of Electricity and Energy (MoEE) Myanmar signed a MoU on February 2018 for Myanmar-Denmark Twinning Program on Renewables to address the need for rapid electrification of Myanmar and to ensure that MoEE has the capacity to make use of renewable energy generation potential and handle variable renewable energy in the power sector. The program has a collaborative approach, bringing in expertise from both public and private sectors. The main objective of this program is to increase the knowledge and capacity of MoEE on integrating renewable power into the grid. Denmark has significant experience in integrating wind power into the grid and there is an opportunity to create a twinning project, which will enable knowledge exchange and collaboration between the two countries. The project includes hands-on training, study visits, executive training, graduate level studies and close collaboration between Danish public and private sector experts and MoEE technicians and economists.

This TOR has been developed under this MoU to acquire the consultancy service and provide the capacity building of MoEE officials to understand project cost/ economic analysis from ground preparation to commissioning phase based on a case study.

2. Objective of the consultancy

The objective of the consultancy is to improve the capacities of MoEE officials to conduct economic analysis and cost estimation of wind power projects to support the national expansion of wind-energy. This consultancy is to build competency in targeted MoEE staff.

3. Scope of work/ Major responsibility

To provide a series of focused trainings to relevant MoEE engineers on:

- 1) Comparing and selecting of commercially available wind turbines for a predetermined capacity of wind power plants.
- 2) Turbine layout optimization and positioning, and routing of access roads between the turbines at selected location onshore.



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- 3) High level calculation of foundation depth and area, concrete moulding and all other civil works depending on the weight and size of selected wind turbines.
- 4) Planning and calculating of hoisting requirements for wind masts and turbines. Includes weight/MW comparisons between commercially available standard wind turbines.
- 5) Designing and calculating of electrical wires routing, connections between turbines and to the transformer/ substations.
- 6) Cost calculating of required manpower, transportation and other related project costs.

Each step of engineering calculation, analysis and financial modeling shall be based on pre-determined wind project design and not expected to train on site identifications, feasibility study, operation and maintenance.

4. Outputs and Timeline

The consultant OR consultants supposed to deliver the following:

1. A detailed work plan for the training activities and reporting
(Approximate number of training days in total - 20 days)
2. A detailed training package
3. Training completion report

| No. | Activity | Date |
|------------|---------------------|-------------------------------|
| 1 | Contract signing | Completed by 22 October 2019 |
| 2 | Workplan submission | Completed by 22 October 2019 |
| 3 | Training | Completed by 31 December 2019 |
| 4 | Final report | Submitted by 31 January 2020 |

5. Required profile:

- Master's Degree in Engineering, Economics or Science
- At least 10 years' experience with project planning, budgeting, and construction of large-scale wind power plants (~100MW)
- Experience in providing technical training to diverse group of people
- Fluency in English and writing training and technical reports
- Knowledge of the energy sector in Myanmar or other South East Asian countries is an advantage.

6. Evaluation

Proposal will be evaluated using the most economically advantageous criterion by identifying the proposal with the best price-quality ratio, with the following weighting:

- Technical quality of the proposal; experience and credentials of the Company / Consultant and the proposed team: 80%
- Cost (fees): 20%



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7. WWF's Mission and Values

It is part of every staff member's terms of reference to contribute to **WWF's mission**:

WWF's Mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by:

- *conserving the world's biological diversity*
- *ensuring that the use of renewable natural resources is sustainable*
- *reducing pollution and wasteful consumption.*

It is also part of every staff member's terms of reference to embody WWF's values, which are Engaging, Optimistic, Determined and Knowledgeable.