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**THE REPUBLIC OF SUDAN**

**MINISTRY OF WATER RESOURCES, IRRIGATION AND  
ELECTRICITY**

**WIND ENERGY PROJECT**

**Promoting Utility Scale Power Generation from Wind Energy**

Request for Proposal for  
**Consultancy Service for**

**THE UPDATING OF RENEWABLE ENERGY MASTER PLAN**

(Term of Reference)

July 2018



## TERMS OF REFERENCE

### FOR THE UPDATING RENEWABLE ENERGY MASTER PLAN

#### Project Title: “Promoting Utility Scale Power Generation from Wind Energy”

#### Project Description

Like many developing countries, Sudan suffers from a shortage of electricity. Approximately 35% of the population have access to electricity. Even then, supply is not reliable and experiences regular outages and even system blackouts. Hydro-power has the largest share of energy generation. The potential to expand hydro-power to meet future needs is limited. Sudan does not have significant oil or gas production and as a result will have to turn to importation of fossil fuels to meet future energy needs. Currently some 800MW gas turbines are being constructed at Garri northern Khartoum and Port Sudan to bridge the present power shortage gap. As an interim solution for the power shortage, the Ministry of Water Resources, Irrigation and Electricity has hired a floating 150MW power plant at Port Sudan. On another side climate change threatens to affect rainfall patterns in the region on which Sudan relies for the water that generates its hydro-power as well as rain-fed agriculture. Considering the hydropower seasonality and the uncertainties surrounding the availability and price of oil products, this further emphasises the need for Sudan to diversify its energy sources.

Sudan currently has a power generation capacity of about 3,500 MW, has no wind generation capacity and no grid-connected solar capacity. Sudan power system responsibility is being undertaken by government-owned companies of the power generation, transmission and distribution networks. The Electricity Regulatory Authority (ERA Sudan) is undertaking the responsibility of the power sector regulation. Sudan transmission grid consist of 965 km of 500 kV transmission lines, 5,984 km of 220 kV transmission lines and 1057 km of 110kV transmission lines . In 2017, the power consumption per capita was 325 kWh/ year. There are no independent power producers (IPPs) in the country -except for a small scale diesel power plant in Nyala, though initiatives are underway to promote private investment in power generation. Former National Electricity Corporation had previous experience in this respect by establishing an IPP department within its structure. Although some IPP agreements have been concluded, they could not be implemented due to the absence of the legal framework. This wind energy project seeks to support those initiatives where they relate to wind power.

The Wind Energy Project is a Government of Sudan/UNDP/GEF initiative for the development of grid connected wind power generation in Sudan and part of its activities is supporting the development of policy and regulatory framework that encourages private sector investment in renewable energy based power generation. The second outcome of the wind energy projects is “Renewable Energy Policy, Institutional, and regulatory framework” including the preparation



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of the Independent Power Producer (IPP) and Public Private Partnership (PPP) Acts and regulations.

The Wind Energy Project (WEP) Executing Entity/Implementing Partner is The Ministry of Water Resources, Irrigation & Electricity (MWRIE) Implementing Entity/Responsible Partners are Ministry of Environment, Forestry & Natural Resources, General Directorate of Energy Affairs - Ministry of Petroleum, Higher Council for Environment & Natural Resources and National Energy Research Centre – Ministry of Sciences and Communications.

In addition to that there are some other important stakeholders such the Ministry of Finance and Economic Planning, Ministry of Investment, Central Bank of Sudan and Ministry of Justice.

All the mentioned above institutions will be referred to as stakeholders in the rest of the documents.

In geographical terms the Wind Energy Project is targeting Dongola wind project northern Sudan as the baseline location to be followed by the Red Sea coast as the first replication. In the meantime meteorological data collection are underway in other potential areas covering the Northern State and South Darfur State western Sudan which are the future targets in the long term planning of wind power application in Sudan.

The baseline wind power plant represents the first of its kind in the country and as such tangible efforts are needed to make a success out of it, as any failure will represent a setback to any future efforts in grid connected renewable energy projects. Therefore, the project is following a holistic approach whereby all technical and non-technical issues surrounding the project are carefully addressed and a wide scale stakeholder involvement is ensued. This includes hardware design, planning and installation, meteorological data collection, analysis and mapping, land ownership, effect on local communities, effect on migratory soaring birds and ecosystem in the project areas.

On the regulatory side ERA Sudan is currently preparing the legal and regulatory frameworks to ensure clarity and transparency of the sector (Energy Efficiency, Renewable Energy and Amendment to Electricity 2001 Acts have been drafted). ERA has also prepared Sudan Grid Code for transmission and Sub Codes for Distribution, Renewable Energy, and Nuclear which has been later updated by The Wind Energy Project and promulgated by ERA Sudan. ERA has also commenced a separate study on the cost of electricity and the tariff structure for Sudan power system including the Feed-in Tariff, the first draft of which has been issued.

Accordingly under this assignment the MWRIE/Wind Energy Project intends to hire the services of Consultancy Firm with vast experience in Formulation of long-term power plans for electricity generated from renewable sources.

### Objectives:

- To help encourage private investments in wind energy as well as other sources of renewable energy.
- Update the existing “Comprehensive Plan for Generating Electricity in Sudan using Renewable Energy” issued in December 2012 to incorporate the changes which have taken place in Sudan power system since then.
- To conduct pre-feasibility study for a minimum of 5 (five) feasible renewable energy projects, considering the off-grid areas and central load areas,



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taking into account the Climate finance and other financial supporting mechanisms.

- To prepare a roll-out plan with prioritization of the projects and recommend an implementation schedule.
- Select the most appropriate projects' sizes for the different RE technologies.
- To set the best means of integrating RE projects into the country master plan and define the maximum RE generation capacities which can be smoothly operated within the power system.
- Advise on the best mitigations of the RE investment barriers in Sudan.

### Scope of Work

MWRIE/Wind Energy Project is seeking the services of Consultancy Firm with vast experience in Formulation of long-term renewable energy plans and its integration in a moderately sized power system.

The scope of the consultancy should include, but not limited to:

1. To identify the suitable renewable energy technologies (solar, wind, geothermal and alternative) and unit sizes for Sudan.
2. Update the "Comprehensive Plan for Generating Electricity in Sudan using Renewable Energy" issued in December 2012 prepared by LI for Sudan up to the year 2031.
3. To develop a brief long term power plan in the light of the draft long term power plan 2012-2030 and the recent developments and commitments in the Sudan Power system, to be used as a base for the update of the RE long term plan. Such Plan is expected to be based on desk study rather than site, utilizing an appropriate demand forecast software. Required data will be prepared by WEP.
4. Strengthening of the RE component of Sudan's Long-Term Power Plan with special emphasis on the power from wind and solar sources. This includes analysis of barriers to the investment in RE and propose the best methods for mitigation.
5. Conduct an economic analysis of the updated Renewable Energy Plan including identification of the investment cost and operation and maintenance cost for each type together with cost/benefit analysis.
6. Propose the ideal cost/benefit analysis tools and software application for the renewable energy plan.
7. Suggest a part of wind energy projects in the plan to be implemented as a Public Private Partnership (PPP) programme with the Government.
8. Propose a financial policy instrument to catalyze the realization of the Plan taking into account the green fund mechanisms and other funding mechanisms.
9. Update the draft long term RE policies and insure the compatibility with East African Power Pool (EAPP) members.
10. Borrow regional and international experience in their long-term renewable energy plans and customize to Sudan condition.
11. Suggest any additional component to this TOR document to fill any gaps on the available documents.
12. Identify capacity building development requirement for relevant stakeholders to have suitable knowledge for Formulation long-term energy plans and policies.
13. Provide training workshop for the above mentioned outputs to the relevant stakeholders' staff in Khartoum.



## Expected Outputs and Deliverables

Deliverables / Outputs	Estimated Duration to Complete	Due Dates	Submission Requirements	% of Payment	Review and Approvals Required
An Inception report for the revision of current RE status in Sudan	15 working day	Within 15 working days from the commencement of the contract.	Inception Report	Nil	Project manager
- Draft report for the Updated RE Master Plan incorporated in the brief long term power plan	60 working days	Within 75 days from the commencement of the contract	Draft Report	50%	Project manager
Presentation to the project stakeholders and getting comments.	1 working days	Within 76 days from the commencement of the contract	Presentation to get comments	Nil	Project manager
Provide training workshop on the RE plans and projects for the relevant stakeholders' staff in Khartoum.	2 working days	Within 78 days from the commencement of the contract	Training workshop		Project manager
- Submission of the Final revised version of Updated RE Master Plan	10 working day	Within 88 days from the commencement of the contract	Final revised version	50%	Project manager

### Institutional Arrangement:

The consultant will work under the supervision and guidance of UNDP, the Wind Energy project through a project team comprised from WEP, ERA and MWRIE

### Duration of the Assignment:

The assignment is for 88 working days.

The assignment is expected to start on 1<sup>st</sup> September 2018 and concluded not later than 15<sup>th</sup> January 2019.



## Duty Station

The consultant duty station during the presentation and the training workshop is Khartoum and working exclusively with the project team.

## Qualifications:

The consulting firm should present:

1. Complete firm profile with demonstrated experience in designing effective schemes for promoting private renewable energy investments and associated implementation programs. Including the project team members CVs.
2. Experience in assessing institutional and professional capacity development needs in the field of renewable energy and formulating respective programs addressing the identified gaps and challenges on the national level.
3. Work experience in countries with similar conditions, especially in the African and Arab countries context, is an advantage.

## Scope of Financial Proposal and Schedule of Payments

The proposal shall be based on Daily fees and all-inclusive payable as follows:

- 25% on completion and submission of Draft report.
- 25% on completion and conducting a presentation to the stakeholders.
- 50% on receipt and acceptance of the Final documents.

### Additional:

UNDP will:

- Cover the cost of economy class return ticket with direct route from/to the consultant home country.
- Provide daily subsistence allowance for the day in the field as per UNDP rule and regulations.

## Recommended Presentation of Offer

Interested consulting firm shall present:

- a) Duly accomplished Letter of Confirmation of Interest and Availability.
- b) Project team personnel CVs, indicating all past experience from similar projects.
- c) Methodology of implementing the assignment.
- d) Financial Proposal that indicates the all-inclusive fixed daily



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### Evaluation Criteria and selection of the consultant:

The selection of the prospective consultant will be based on the combined weight of:

- Qualifications and methodology 70%.
- Financial offer 30%;

Assessment Criteria	Maximum Obtainable Points	Weightage (%)	Evaluated Points Obtained by the Offerors		
			A	B	C
<b>Methodology</b>					
The completeness of the proposal and the comprehensiveness of the methodology.	10	14%			
The work plan schedule and timeline to complete the study.	10	14%			
<b>Qualification</b>					
Firm profile.	15	21%			
Experience in assessing institutional and professional capacity development needs.	20	30%			
Project team members CVs.	10	14%			
Work experience in countries with similar conditions, especially in the African and Arab countries context.	5	7%			
<b>TOTAL</b>	<b>70</b>	<b>100%</b>			