Promoting Utility Scale Power Generation from Wind Energy

UNDP/GEF Project

GEF ID No: 4745

UNDP PIMS No: 4726

TERMINAL EVALUATION REPORT

Prepared by

Dalibor Kysela
International Consultant

Abd Alrahman Elamin
National Consultant

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Acronyms and Abbreviations

CDM	Clean Development Mechanism
CO	Country Office
CO_2	Carbon dioxide
EIA	Environmental Impact Assessment
ERA	Electricity Regulatory Authority
GEF	Global Environment Facility
GHG	Greenhouse Gas
GoS	Government of Sudan
HCENR	Higher Council for Environment and Natural Resources
M&E	Monitoring and Evaluation
MEM	Ministry of Energy and Mining
MoNRPD	Ministry of Environment, Natural Resources and Physical Development
MoF	Ministry of Finance
MoM	Ministry of Mining
MoP	Ministry of Petroleum
MoSC	Ministry of Science and Communications
MWRE	Ministry of Water Resources and Electricity (until re-structuring of the Government in 2019)
MW	Megawatt
NAMA	Nationally Appropriate Mitigation Action
NERC	National Energy Research Centre
NGO	Non-Governmental Organisation
PIR	Project Implementation Report
PMU	Project Management Unit
PPG	Project Preparation Grant
PPP	Public Private Partnership
PB	Project Board
PV	Photovoltaic
RE	Renewable Energy
RTA	Regional Technical Advisor
SETCO	Sudanese Electricity Transmission Co.
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change

Glossary of Evaluation-related Terms

Term	Definition
Baseline data	Data that describe the situation to be addressed by an intervention and serve as the starting point for measuring the performance of the intervention
Beneficiaries	The specific individuals or organizations for whose benefit an intervention is undertaken
Capacity development	The process by which individuals, organizations, institutions and societies develop their abilities individually and collectively to perform functions, solve problems and set and achieve objectives
Conclusion	A reasoned judgement based on a synthesis of empirical findings or factual statements corresponding to a specific circumstance
Effect	Intended or unintended change due directly or indirectly to an intervention
Effectiveness	The extent to which the development intervention's objectives were achieved, or are expected to be achieved
Efficiency	A measure of how economically resources/inputs (funds, expertise, time, etc.) are converted to results
Finding	A factual statement about the programme or project based on empirical evidence gathered through monitoring and evaluation activities
Impact	Positive and negative, intended and non-intended, directly and indirectly, long term effects produced by a development intervention
Indicator	Quantitative or qualitative factors that provide a means to measure the changes caused by an intervention
Lessons learned	Generalizations based on evaluation experiences that abstract from the specific circumstances to broader situations
Logframe (logical framework approach)	Management tool used to facilitate the planning, implementation and evaluation of an intervention. It involves identifying strategic elements (activities, outputs, outcome, impact) and their causal relationships, indicators, and assumptions that may affect success or failure. Based on RBM (results-based management) principles
Outcome	The likely or achieved (short-term and/or medium-term) effects of an intervention's outputs
Output	The product, capital goods and/or service which results from an intervention; may also include a change resulting from the intervention which is relevant to the achievement of an outcome
Rating	An instrument for forming and validating a judgement on the relevance, performance and success of a programme or project through the use of a scale with numeric, alphabetic and/or descriptive codes
Recommendation	A proposal for action to be taken in a specific circumstance, including the parties responsible for that action
Relevance	The extent to which the objectives of an intervention are consistent with beneficiaries' requirements, country needs, global priorities and partners' and donor's policies
Risk	Factor, normally outside the scope of an intervention, which may affect the achievement of an intervention's objectives
Sustainability	The continuation of benefits from an intervention, after the development assistance has been completed
Stakeholders	The specific individuals or organizations that have a role and interest in the objectives and implementation of a programme or project
Theory of Change	A set of assumptions, risks and external factors that describes how and why an intervention is intended to work.

Acknowledgement

Authors of this Terminal Evaluation report wish to express their appreciation to all stakeholders of the Wind Energy Project whom they interviewed during the data collection phase for their time devoted to the interviews, their open views on implementation of the project and their candid opinions on the achieved results.

Special thanks are extended to the staff of the UNDP Country Office in Sudan and the Project Team for timely provision of all requested information and assistance with organization of the virtual interviews, as well as for effective arrangements for the field visit of the Dongola project site by the National Consultant.

The excellent cooperation of all parties enabled the evaluators to obtain as much as possible of first-hand information from various project partners and together with data extracted from the project documentation and various complementary information sources enabled to provide an objective assessment of the status of the project achievements and thus contributed to successful completion of the Terminal Evaluation.

EXECUTIVE SUMMARY

Project Information Table

Project Title	Promoting Utility Scale Power Generation from Wind Energy		
UNDP Project ID (PIMS #):	4726	**PIF Approval Date**	8 April 2013
GEF Project ID (PMIS #):	4745	**CEO Endorsement Date:**	18 August 2014
ATLAS Business Unit: **Award ID** **Proj. ID:**	SDN10 00080570 00090222	**Project Document (ProDoc) Signature Date (date project began):**	4 December 2014
Country(ies):	Sudan	**Date project manager hired:**	1 April 2015
Region:	Arab States	**Inception Workshop date:**	18 February 2015
Focal Area:	Climate Change	**Midterm Review completion date:**	4 December 2017
GEF Focal Area Strategic Objective:	CC1: Promote the demonstration, deployment, and transfer of innovative low-carbon technologies CC3: Promote investment in renewable energy technologies	**Planned closing date:**	31 December 2019
Trust Fund [indicate GEF TF, LDCF, SCCF, NPIF]:	GEF TF	**If revised, proposed op. closing date:**	30 June 2021
Executing Agency/Implementing Partner:	Ministry of Water Resources and Electricity (MWRE) until 2019 restructuring of the Government, Ministry of Energy and Mining (MEM) since 2019		
Other execution partners:	N.A.		
Project Financing	***at CEO endorsement (US$)***	***At Terminal Evaluation (US$)***	
GEF financing:	3,536,364	3,534,211	
UNDP contribution	250,000	582,196	
Government	213,700,000	2,423,000	
Other partners	-	-	
Total co-financing	213,950,000	3,005,196	
PROJECT TOTAL COSTS	**217,486,364**	**6,539,407**	

Purpose and objective of the evaluation

The purpose of Terminal Evaluation (TE) is to provide the project partners i.e. GEF, UNDP and the Government of Sudan with an independent assessment of the key achievements of the project as compared to the original Project Document for the implementation period of the Wind Energy Project (WEP). The TE provides assessment of the expected outcomes and their sustainability through measurements of the changes in the set indicators, summarize the experiences gained, identify and highlight lessons learned, and make recommendations for the future. The time focus of the evaluation is the implementation period of the WEP from December 2014 through June 2021. The geographic focus of the evaluation is Sudan.

The evaluation applied a participatory and consultative approach to inform and consult with all key stakeholders associated with the WEP, in particular the Government counterparts, the GEF operational focal point, the UNDP Country Office, the National Project Team, the UNDP/GEF Technical Adviser, representatives of the project ultimate beneficiaries, and others. It used the primary evaluation criteria listed in the Terms of Reference for the evaluation, i.e. relevance, effectiveness, efficiency, sustainability, and impact of interventions.

Project description

The project "Promoting Utility Scale Power Generation from Wind Energy" (further the Wind Energy Project – WEP) was designed to support removal of barriers to the adoption of utility-scale wind energy tied to the national grid in Sudan. Wind energy had been identified as a priority mitigation technology by the Government of Sudan, and, although it is a mature technology globally, it had not yet been adopted in Sudan. The WEP design is based on a systems approach that integrates energy policy analysis within the broader developmental objectives of Sudan. The project also aimed at establishment of regulatory frameworks for encouraging private investments in grid-connected wind energy. At the time of the WEP preparation, Sudan had plans to develop utility-scale wind farms in four regions: Dongola in the North, Nyala in the South, the Red Sea coastal region and Khartoum.

The objective of the WEP is to reduce greenhouse gas (GHG) emissions by promoting the use of wind energy in Sudan. The main planned project intervention is direct technical assistance to the Dongola wind farm with expected replication of experiences from the Dongola wind farm to the Red Sea and other subsequent wind farms. The other project interventions aimed at putting in place legislation and a framework to promote private sector involvement in renewable energy in Sudan. Against this background, The WEP was designed and launched with four components as described below.

Summary of findings

The WEP was approved for implementation by GEF CEO on 8 August 2014 for a period of 60 months. The signature of the Project Document by the Government of Sudan on 4 December 2014 officially marked the start of the project implementation. The original closure day of the project was January 2020. Further to the MTR recommendation, the project was granted 1-year extension. Due to the impact of the COVID-19 pandemic in the project final years, an automatic

additional 6-month extension was granted. However, the project was not able to commence the Terminal Evaluation in time for the project operational closure in July/August 2021, the closure was further delayed by three months but even this was not sufficient and had to be further prolonged.

The WEP is consistent with Sudan's commitments under the United Nations Framework Convention on Climate Change (UNFCCC). It is also aligned with the National Clean Development Mechanism (CDM) Strategy that was formulated in 2011 that identified wind energy as the most promising renewable energy option in the short-term. The WEP is also well aligned with the Sudan Intended Nationally Determined Contribution (INDC) submitted in response to the Paris Agreement.

The WEP is also in line with the UNDP Country Programme Action Plan (CPAP) for Sudan (2013-2016), namely Focus Area 4: Environment, Energy and Natural Resource Management, as well as with GEF-5 Focal Area Climate Change Mitigation. It directly relates to UN SDG #7 and indirectly to several other SDGs.

The implementation of the WEP was affected by three factors, namely the overambitious design, lack of financing for the 100 MW baseline wind project at Dongola, and delays in procurement of equipment.

As the financing for the baseline investment project did not materialise, a decision was taken to re-programme the budget of Outcome 1 for financing of the 1MW demonstration wind turbine, the procurement of equipment was slow because of limited institutional capacity for procurement of such big items, starting from delays in development of technical specifications and ending with slow pace of technical and economic evaluations. The procurement challenges were further compounded by COVID-19 outbreak in the final two years of implementation. Although the main equipment for the wind turbine was finally delivered to the Dongola site, installation was still in progress at the time of the TE hence the wind turbine would be operational only after the project operational closure.

The WEP assistance was provided through technical assistance and capacity building. Specifically, the project supported strengthening of technical capacities necessary for wind energy development and establishment of required infrastructure. Particular achievement is the development of the wind atlas of Sudan that was integrated in the GIS system of the Sudanese Electricity Transmission Company (SETCO) that will be important for identification of suitable localities for future wind energy projects. Moreover, three leading national research and academia institutions were equipped with wind measurement and monitoring systems.

On the capacity building side, the project supported training of about 100 technicians and engineers from different organizations through targeted trainings and participating in the project implementation.

Sustainability and progress to impact

The Government of Sudan and other project stakeholders demonstrated a strong commitment towards implementation of the WEP. However, The Sudanese electricity sector has not yet

created a sufficiently enabling environment for private sector investments. During the lifespan of the WEP, Sudan's arrears to the International Development Association (IDA) caused lack of credit guaranties for private investors. Although the recent clearance of the arrears has paved way for Sudan's re-engagement with IDA after nearly three decades, it remains to be seen how quickly and effectively the IDA grants will be available for support of investments into renewable energy projects.

Development of wind energy maintains a prominent position in the recently updated Nationally Determined Contribution (NDC) under the Paris Agreement. Implementation of the NDC will provide opportunities for further improvement of the existing legal and institutional frameworks and will thus enhance sustainability of the WEP results.

Environmental sustainability is enhanced by the fact that in addition of the global environmental benefits of CO2 emission reductions the wind electricity production has much lower life cycle emissions of conventional air pollutants than conventional coal and natural gas power plants. Use of the wind technology for power production in Sudan is also important with regard to water extractions as it reduces competition for scarce water resources and reduces thermal pollution from water returns and prevents discharges of chemical pollutants, such as the biocides used in cooling towers of conventional power plants.

Summary of conclusions

Overall, the resource allocation to the individual WEP components was found reasonable and balanced. The evaluators did not find any serious inefficiencies in the use of the allocated funds and therefore consider the use of the project funds cost-effective.

The analysis of project expenditures showed that the project has used almost 100% of the GEF grant but has not delivered all planned results by the time of the TE. The 18-month extension of the project was justified by the slow start of the project and the COVID-19 impact. Notwithstanding the extension, some of the planned results were not achieved by the time of the TE, particularly under Components 1 and 4.

The WEP was designed to provide support for establishment and implementation of the baseline investment project of the 100 MW wind farm at Dongola. The changed political situation, negative impact of the US economic sanctions, and unresolved arears of Sudan with the International Development Association was the reason that despite its commitment to the Dongola project, the Government of Sudan (GoS) was not able to find required funding even for the initial phase of the 5 MW capacity installation.

The WEP supported development of several policy instruments and regulatory tools that will have a long-term impact on development of renewable energy in Sudan, including RE policy as well as secondary legislation. Particularly important in this regard was the development of feed-in-tariffs (both on and off-grid) for RE that will ensure financial viability of RE projects and therefore access to finance for future RE investment projects.

Establishment of the "one-stop-shop" in the Ministry of Energy (MoE) is also an important assistance to wind energy investors and developers. A Directorate of Investment was formed

within the structure of the Sudanese Electricity Holding Company (SEHC). All these are considered as important steps opening the RE market including wind energy installations to private sector investors.

However, several important policy and regulatory instruments including the FiT policy, power purchase agreement approach and NAMA reports are still waiting for approval by the GoS. Also, several activities and knowledge products for the demo wind farm were not developed due to lack of progress in the baseline/demonstration wind project, couldn't be made, including the preparation of SOPs for wind power plants.

Extensive stakeholder consultations at the project preparatory phase resulted in high ownership by the various WEP stakeholders. Strong ownership of the project by various governmental and private sector entities was sustained throughout the project implementation and proved to be one of the critical drivers of progress towards the planned results under the institutional framework development and capacity building components (Outcomes 2 and 3) of the WEP. The ownership was demonstrated by active participation and engagement of relevant public institutions and private entities in the WEP implementation and by a strong role of the Project Board in providing strategic guidance and operational oversight to the project.

The project does not belong to the class of projects where gender equality would be one of the main concerns. Both males and females were involved to the extent possible in the project activities, particularly in the capacity building and meetings of the project governance and planning bodies. Nevertheless, there is a room for improvement towards a stronger monitoring and reporting framework for the gender dimension for future projects.

Key lessons learned

- Importance of a thorough revision of the assumptions made at the project inception and initial identification of risks and their systematic monitoring throughout the project.
- Clarification of roles and responsibilities of project stakeholders ensures that the comparative advantages of different actors are taken into consideration for building complementarities while avoiding overlaps, competition and waste of resources.
- Need for timely adaptive management decisions for revision of the project results framework in light of changed external factors affecting the project

Summary of TE ratings

1.Monitoring & Evaluation (M&E)	**TE Rating**
M&E plan: design at entry	Satisfactory (S)
M&E plan: implementation	Moderately Satisfactory (MS)
Overall quality of M&E	Moderately Satisfactory (MS)
2.Implementing Agency Implementation & Executing Agency Execution	**TE Rating**
Quality of UNDP Implementation/Oversight	Satisfactory (S)
Quality of Implementing Partner Execution	Satisfactory (S)
Overall quality implementation / execution	Satisfactory (S)
3.Assessment of Outcomes	**TE Rating**
Relevance	Relevant (R)
Effectiveness	Moderately Satisfactory (MS)
Efficiency	Moderately Satisfactory (MS)
Overall Project Outcome	Moderately Unsatisfactory (MU)
4.Sustainability	**TE Rating**
Financial	Moderately Likely (ML)
Socio-political	Likely (L)
Institutional framework and governance	Moderately Likely (ML)
Environmental	Likely (L)
Overall Likelihood of Sustainability	Moderately Likely (ML)

Recommendations Table

No.	Recommendation	Entity Responsible	Time frame
1.	The Ministry of Energy and Mining (MEM) should provide sufficient resources for the WEP PMU to continue supervision and coordination of the wind turbine installation and commissioning until the point of handover to the turbine operator	MEM	1st quarter 2022
2.	The Ministry of Energy and Mining (MEM) should closely monitor the legislative approval process for the policy and regulatory instruments for renewable energy in order to ensure enabling policy and legislative framework is in place for attracting private investments into wind energy	MEM	1st half of 2022
3.	The Ministry of Energy and Mining (MEM) should ensure continued operation and maintenance of the WEP website and its linkages to the one-stop-shop for investors and developers of wind energy projects that was established under the WEP. One option could be handing over the project website to educational institutions or research centres.	MEM	1st quarter 2022
4.	The UNDP CO should mobilise resources for assistance to the GoS in discussions with international and local financial intermediaries with the aim of supporting establishment of private sector funding windows and credit lines for leveraging required financing for private sector investments in wind energy projects	UNDP CO	1st half of 2022
5.	The Ministry of Energy and Mining (MEM) should ensure that performance data from operation of the demonstration turbine are systematically collected and cross-validated with the wind atlas developed under the WEP in order to inform planning of future wind energy projects	MEM	Upon handover of the wind turbine to operator
6.	For design of future projects on wind energy, the UNDP CO should include baseline investment projects that already have secured financing and eventually have started implementation. Attention should be paid to phased and gradual increase of the wind energy production capacities	UNDP CO	Future project design
7.	For implementation of future projects on RE, UNDP CO and the national Implementing Partner should ensure timely organisation of the project Inception Workshop and ensure that it is used for rigorous assessment of the original assumptions and risks to the project and eventual substantive changes of the project results framework	UNDP CO and MEM	Future RE projects design
8.	UNDP CO should ensure that the project designers undertake a careful assessment of the potential provision of global environmental benefits from RE projects already during the projects' implementation phase and, wherever possible, focus the project objective indicators and targets on immediate post-project time periods.	UNDP CO	Future RE projects design
9.	UNDP CO should ensure that design of future projects on RE include a more thorough analysis of potential impacts of the planned interventions on men and women and that monitoring of the projects capture and report information about the gender mainstreaming in a systematic manner	UNDP CO and MEM	Future RE projects design
10.	UNDP CO should ensure that information on actual project co-financing is systematically tracked during the project implementation and is included in the last Project Implementation Report.	UNDP CO	Future RE projects design

INTRODUCTION

In line with the GEF Evaluation Policy, a Terminal Evaluation (TE) is undertaken at completion of the GEF-funded projects to assess their performance (in terms of relevance, effectiveness, and efficiency), and determine outcomes and impacts (actual and potential) stemming from the project, including their sustainability. It is conducted to provide a comprehensive and systematic account of the performance of a completed project by assessing its design, implementation, and achievement of objectives. TE is also expected to promote accountability and transparency, facilitate synthesis of lessons learned, and provide feedback to allow the GEF to identify issues that are recurrent across the GEF portfolio.

This document presents results of the Terminal Evaluation of the UNDP/GEF project "Promoting Utility Scale Power Generation from Wind Energy" (hereafter the Wind Energy Project – WEP). As a standard requirement for all projects financed by GEF, this terminal evaluation has been initiated by the Lead Implementing Agency, in this case UNDP Country Office (CO) in Sudan. The evaluation was conducted in accordance with the GEF Monitoring and Evaluation Policy[1], the Guidelines for GEF Agencies in Conducting Terminal Evaluations[2], and the UNDP Evaluation Guidance for GEF Financed Projects[3].

Purpose and objective

The purpose of TE is to provide the project partners i.e. GEF, UNDP and the Government of Sudan with an independent assessment of the key achievements of the project as compared to the original Project Document for the implementation period of the WEP. The TE provides assessment of the expected outcomes and their sustainability through measurements of the changes in the set indicators, summarize the experiences gained, identify and highlight lessons learned, and make recommendations for the future.

The Terms of Reference for the Terminal Evaluation is provided as Annex 1 to this report.

Scope and methodology

The evaluation covers all activities undertaken in the framework of the WEP. The time focus of the evaluation is the implementation period of the WEP from December 2014 through June 2021. The geographic focus of the evaluation is Sudan.

The evaluation used a participatory and consultative approach to inform and consult with all key stakeholders associated with the WEP, in particular the Government counterparts, the GEF operational focal point, the UNDP Country Office, the National Project Team, the UNDP/GEF Technical Adviser, representatives of the project ultimate beneficiaries, and others.

[1] The GEF Monitoring and Evaluation Policy, Global Environmental Facility, November 2010

[2] Guidelines for GEF Agencies in Conducting Terminal Evaluation for Full-sized Projects, GEF, 2017 https://www.gefieo.org/sites/default/files/documents/reports/gef-guidelines-te-fsp-2017.pdf

[3] Guidance for Conducting Terminal Evaluations of UNDP-Supported, GEF-Financed Projects, UNDP, 2020 http://web.undp.org/evaluation/guideline/documents/GEF/TE_GuidanceforUNDP-supportedGEF-financedProjects.pdf

The evaluation used the primary evaluation criteria listed in the Terms of Reference for the evaluation, i.e. relevance, effectiveness, efficiency, sustainability, and impact of interventions. Since it may take some time for the impacts to be realized, the evaluation aimed at determining the level of progress towards realization of planned impacts.

Data collection and analysis

The following text provides a conceptual framework of methodology for data collection and analysis under the evaluation criteria. Due to the COVID-19 international travel restrictions, all interviews of the WEP stakeholders by the international expert were done in a virtual and remote modality.

Relevance

Conceptualization/Design

The evaluation assessed whether the approach used in design and selection of WEP interventions addressed the root causes and principal threats in the project area. This also included an assessment of the WEP logical framework and whether the different project components and activities proposed to achieve the objective were appropriate, viable and responded to contextual institutional, legal and regulatory settings of the project. Furthermore, it assessed the indicators defined for guiding implementation and measurement of achievement and whether lessons from other relevant projects (e.g., same focal area) had been incorporated into WEP design.

Country ownership and stakeholder participation

The evaluation assessed the extent to which the WEP idea/conceptualization had its origin within national and sectoral development plans and to what extent it focused on national environment and development interests., including changes over time. It also provides assessment of information dissemination, consultation, and stakeholder participation in design stages of the project.

Replication and linkages

The evaluation determined the ways in which lessons and experiences coming out of the WEP were/are to be replicated or scaled up in the design and implementation of other projects (this is also related to actual practices undertaken during implementation). It looked at linkages between the WEP and other interventions within the sector and the definition of clear and appropriate management arrangements at the design stage. This element also addressed the question of to what extent the WEP addressed UNDP priorities and cross-cutting issues such as gender, south-south cooperation, and poverty-environment linkages (sustainable livelihoods). It also examined linkages between the WEP and the UNDP normative programming instruments and response of the UN system to national development priorities in the form of UNDAF and CPD for the recipient country.

Effectiveness and efficiency

Implementation approach

This part of the evaluation includes assessments of the following aspects:

- The use of the logical framework as a management tool during implementation and any changes made to the framework as a response to changing conditions and/or feedback from monitoring and evaluation (M&E) activities if required;
- Other elements that indicate adaptive management such as comprehensive and realistic work plans routinely developed that reflect adaptive management and/or; changes in management arrangements to enhance implementation;
- The project's use/establishment of electronic information technologies to support implementation, participation and monitoring, as well as other project activities;
- The general operational relationships between the institutions involved and others and how these relationships have contributed to effective implementation and achievement of project objectives;
- Technical capacities associated with the WEP and their role in the project development, management and achievements.

Monitoring and evaluation

Under the M&E, the evaluation includes an assessment as to whether there has been adequate periodic oversight of activities during implementation to establish the extent to which inputs, work schedules, other required actions and outputs are proceeding according to plan; whether formal evaluations have been held and whether action has been taken on the results of this monitoring oversight and evaluation reports.

Stakeholder participation

This includes assessments of the mechanisms for information dissemination in the WEP implementation and the extent of stakeholder participation in management, emphasizing the following:

- The production and dissemination of information and lessons generated by the project;
- Local resource users and NGOs participation in project implementation and decision making and an analysis of the strengths and weaknesses of the approach adopted by the WEP in this field;
- The establishment of partnerships and collaborative relationships developed by the project with local, national and international entities and the effects they have had on project implementation;
- Involvement of governmental institutions in the WEP implementation and the extent of governmental support to the project.

Financial planning and procurement management

The assessment in the field of financial planning looks into the actual WEP cost by objectives/outputs/activities and the cost-effectiveness of achievements, financial management (including disbursement issues) as well as co-financing of the WEP. It assessed technical and human resource capacity for procurement, linkage between work programming and procurement planning and budgeting as well as effectiveness of procurement management.

Assessment of project results

The GEF Monitoring and Evaluation Policy (2010) specifies that terminal evaluations will, at the minimum, assess achievement of outputs and outcomes, and report on these. While assessing a project's results, the evaluation determines the extent to which the project objectives – as stated in the documents submitted at the GEF CEO Endorsement stage – have been achieved. The evaluation also indicates any changes in project design and/or expected results after start of implementation.

Attainment of outcomes/ Achievement of objectives

Through review of the WEP results framework, the evaluation revisited the original outcome model (also known as the results map) in the Project Document and examined the causal logic of the initiative under evaluation and whether and eventually how it developed during the life of the WEP. The revisited outcome model served as a map that captures knowledge of the WEP stakeholders and boundary partners about how an outcome is intended to be achieved. The model also identified the intended target group of the initiative at the outcome level and the expected changes that the initiatives will contribute to.

Sustainability

The assessment of sustainability includes an assessment of the extent to which benefits continue, within or outside the project domain after GEF assistance/external assistance has come to end as well as eventual development of a sustainability strategy.

Progress to impact

It is often too early to assess long-term impacts of GEF projects at the point of project completion hence the evaluation assesses whether there is any evidence on progress towards long-term impacts as well as the extent to which the key assumptions of the project's theory of change hold and the extent to which the eventual progress towards long-term impact may be attributed to the WEP.

In addition to the analysis of progress to impacts in terms of available qualitative and quantitative evidence on environmental stress reduction, the evaluation also examined the project's contributions to changes in policy/ legal/regulatory framework, including reported and/or observed changes in capacities (awareness, knowledge, skills, infrastructure, monitoring systems, etc.) and in access to and use of information (laws, administrative bodies).

Other assessments

The evaluations assessed the following additional topics for which ratings are not required:

- Materialization of co-financing: the evaluation provides information on the extent to which expected co-financing materialized, whether co-financing was cash or in-kind, whether it is in form of grant or loan or equity, whether co- financing was administered by the WEP management or by some other organization, how short fall in co-financing or materialization of greater than expected co-financing affected the WEP results, etc.
- Gender Concerns: The evaluation makes assessment of the extent to which the gender considerations were taken into account in designing and implementing the WEP, the extent to which the project was implemented in a manner that ensures gender equitable participation and benefits, and whether gender disaggregated data was eventually gathered and reported on beneficiaries.

The evaluation was conducted in three phases as follows:

Preparation

As an initial step and part of this report preparation, an initial screening and limited desk review has been conducted of a variety of documents mainly those covering project design and implementation progress. Results of the initial review provide grounds for formulation of evaluation questions as discussion points that aim at gathering information from project stakeholders and beneficiaries about their attitudes and preferences as well as collecting factual information from relevant sources linked to the performance indicators.

Data collection

First-hand information was collected through semi-structured interviews with selected project stakeholders. The interviews were designed to solicit responses to a set of predetermined open-ended questions aiming to obtain in-depth information about the key informants' experiences from the project implementation and their opinions on the achievement of the planned results. They were based on a semi-structured format in order to allow the respondents to express their perception of the main issues related to the project implementation.

Data analysis

Data analysis as the final stage of the evaluation included detailed review of documents prepared during the preparation phase, project reports including annual PIRs, project budget revisions, lesson learned reports, national strategic and legal documents, and any other materials that the team considers useful for this evidence-based evaluation. The Evaluators took perspectives of all relevant stakeholders into account and gathered information on project performance and results from multiple sources including the project M&E system, tracking tools, field visit, stakeholder interviews, project documents, and other independent sources, in order to facilitate triangulation of the data. Contextual information was also gathered to assess the significance and relevance of the observed performance and results.

The collected information was organized, classified, tabulated, and summarised in order to respond to the evaluation questions and fulfil the purposes of the evaluation. In view of the nature of evaluation questions and use of predominantly qualitative assessment approach, the collected data was processed by systematically coding and collating the data collected, ensuring its accuracy, and translating the data into usable formats or units of analysis related to each evaluation question.

Triangulation of results, i.e. comparing information from different sources, such as documentation and interviews, or interviews on the same subject with different stakeholders, was used to corroborate and check the reliability of the evidence. Through this approach, the evaluators verified the information obtained in the document review phase, got some missing data and were thus able to better interpret the collected information and evidence.

Evaluation ethics

The evaluation was conducted in accordance with the ethical principles outlined in the UNEG Ethical Guidelines for Evaluations, namely the four guiding ethical principles for evaluation: Integrity, Accountability, Respect, and Beneficence[4].

Limitations of the evaluation

Since visit of the international consultant was not possible due to the COVID-19 travel restrictions, interviews with selected WEP stakeholders were conducted virtually and remotely through on-line meeting platforms. This limited the ability of the International Consultant to use direct observation at the stakeholder and beneficiary institutions for gathering additional information, triangulating previously obtained information, and getting a broader picture. This limitation was mitigated to the extent possible through arrangement of face-to-face meetings with selected project stakeholders and visit of the Dongola project site by the National Consultant.

Structure of the evaluation report

The structure of the TE report follows the "Evaluation Report Outline" presented in Annex F of the ToR of the assignment.

The 'Executive Summary' of the report is provided in the beginning of the report. The body of the report starts with introduction and development context of the WEP and continues with a short project description. This is followed by the chapter that sets out the evaluation findings presented as factual statements based on analysis of the collected data. The findings are structured around the five essential evaluation criteria and include assessment of the WEP performance against the performance indicators and their target values set out in the project results framework (as provided in the Project Document). This part further includes assessment

[4] UNEG Ethical Guidelines for Evaluation, 2020
https://www.unodc.org/documents/evaluation/Guidelines/UNEG_Ethical_Guidelines_for_Evaluation

of the project management arrangements, financing and co-financing inputs, partnership strategies and the project monitoring and evaluation systems.

The final part of the report contains conclusions and recommendations substantiated by the collected evidence and linked to the evaluation findings. While the conclusions provide insights into identification of solutions to important issues pertinent to the project beneficiaries, UNDP and GEF, the recommendations are directed to the intended users in terms of actions to be taken and/or decisions to be made. This part of the report concludes with lessons that can be taken from the evaluation, including good practices that can provide knowledge gained from the particular WEP circumstances that are applicable to similar UNDP interventions.

PROJECT DESCRIPTION

Project start and duration

The WEP was approved for as a five-year full-size GEF project. The signature of the Project Document by the Government of Sudan on 4 December 2014 officially marked the start of the project implementation. The original completion date was 31 December 2019. The project received a 1-year extension plus another 6-month extension as a result of COVID-19 impact.

Development Context

Like many developing countries, Sudan has a shortage of electricity. At the time of the WEP preparation, only approximately 35% of the population had access to electricity (Ministry of Water Resources and Electricity - Renewable Energy Master Plan 2013) but the supply was not reliable and experienced regular power outages. Hydropower had the largest share of energy generation but its potential for expansion to meet future needs is limited. Sudan does not have significant oil or gas production and consequently it will have to turn to import of fossil fuels to meet future energy needs. Climate change threatens to affect rainfall patterns on which Sudan relies for the water that generates its hydropower. This further emphasises the need for Sudan to diversify its energy sources.

At the time of the WEP inception, Sudan had a generation capacity of 2,723 MW of power (ibid), had no wind generation capacity and no grid-connected solar photovoltaic capacity. All power generation facilities as well as transmission and distribution lines in Sudan were publicly owned. The Government owns 5,984 km of 220 kV transmission lines and 965 km of 500 kV transmission lines. In 2012, the power consumption per capita was 233 kWh/year[5] . In 2012, the power transmission losses were approximately 4%, and distribution losses reached approximately 18%. Therefore, in total roughly one-fifth to one-quarter of the electricity generated was lost in transmission and distribution[6]. As a result, Sudan had to generate 25% to 33% more power than is consumed to overcome the transmission and distribution losses, and, in the process, emit associated greenhouse gases[7].

About 44% of Sudan's electricity was generated from fossil fuels. The principal fossil fuels used for Sudan’s power generation were heavy and light fuel oils, with shares of 61% and 39% respectively of the fossil fuel used for power generation in Sudan. Hydro-power plants represent 56% of Sudan's installed power generation capacity, more than any other technology[8]. To meet the Government's target of 75-80% electrification by2031, the Government plans to install 12,000 MW of additional generation capacity by 2031. This is to include 1,582 MW of

[5] Statistical Bulletin, Arab Union of Electricity (2012)
[6] Sudan and South Sudan Country Profile, US EIA (2013)
[7] Long Term Power System Plan, MWRE (2013)
[8] Second National Communication to the UNFCCC, Government of Sudan (2013)

renewable energy (other than large-scale hydropower), with approximately 650 MW of wind energy[9].

There were no independent power producers (IPPs) in the country; though initiatives were underway to promote private investments in power generation. The WEP seeks to support those initiatives where they relate to wind power.

Problems that the project sought to address

The Project Document does not provide an explicit list of barriers to development of wind energy in Sudan or their root causes. The evaluators compiled the following main barriers at the WEP inception.

Legal and regulatory barriers: At the project baseline there was no regulatory framework for renewable energy purchases and for connection of various RE sources to the grid.

Institutional and policy barriers: Sudan did not have a designated authority to promote renewable energy. However, a law on RE was under consideration that would establish such an agency.

Information and awareness barriers: Lack of knowledge and high-risk perception about RE technologies in general and wind farms in particular existed among decision-makers, the banking sector, the energy sector community, and the general public.

Technological barriers: The baseline wind farms faced technological barriers, which had not been taken into consideration in their design. If not addressed decisively, these technological barriers enhance the risk of failure of the demonstration wind farms, thereby reducing future acceptance of the technology. The national power grid is relatively unstable, experiencing variations in both frequency and voltage. The MWRE/MEM had experience only in synchronising power generated from different conventional sources that provide base load but lack experience in synchronising the grid with power generated from a variable source such as wind. grid stability to accommodate power generated from a variable source such as wind is still inadequate.

Financial and project implementation barriers: Lack of budget from the MWRE/MEM was a critical barrier to implementation of the initial wind farm in Dongola. Also, the baseline legislation did not enable private sector investment in wind energy projects.

Immediate and development objectives of the project

The WEP was designed to support the removal of barriers to the adoption of utility-scale wind energy tied to the national grid in Sudan. Wind energy had been identified as a priority mitigation technology by the Government of Sudan, and, although it is a mature technology globally, it had not yet been adopted in Sudan. The WEP design is based on a systems approach that integrates energy policy analysis within the broader developmental objectives of Sudan.

[9] Long- and Medium-Term Power System Plans of Sudan, Lahmeyer International (2013)

The project also aimed at establishment of regulatory frameworks for encouraging private investments in grid-connected wind energy. At the time of the WEP preparation, Sudan had plans to develop utility-scale wind farms in four regions: Dongola in the North, Nyala in the South, the Red Sea coastal region and Khartoum.

The objective of the WEP is to reduce greenhouse gas (GHG) emissions by promoting the use of wind energy in Sudan. The main planned project intervention is direct technical assistance to the Dongola wind farm with expected replication of experiences from the Dongola wind farm to the Red Sea and other subsequent wind farms. The other project interventions aimed at putting in place legislation and a framework to promote private sector involvement in renewable energy in Sudan. Against this background, The WEP was designed and launched with four components as described below.

Expected results

The WEP was designed to provide global environmental benefits in through contribution to GHG emission reductions as a combination of:

- Direct GHG emission reduction benefits from the Dongola wind farm;
- Indirect GHG reduction benefits resulting from broader RE market transformation arising from the project activities.

Over the lifetime of the WEP, the expected direct CO_2 emission reductions attributed to the Dongola wind farm were estimated at 91,780 tCO_2/year, or 1,835,600 tCO_2 over the 20-year life of the wind farm. This does not include any wind farms installed as an indirect result of the project – through the RE market transformation, awareness-raising and supply chain assistance activities.

Apart from the global benefits, the WEP was expected to induce associated national and local benefits in terms of reduced local pollution from the burning of fossil fuels and strengthened national energy security through reduced dependency on imported fuels.

Table 1 below provides the expected results at the level of the Project Objective as per the approved Project Document.

Table 1: Expected results at the level of the Project Objective

Project Objective	Indicator	End-of-project Targets
To overcome barriers to the market development of utility-scale wind farms in Sudan	Introduction of renewable energy policies and regulations	Put in place Sudan renewable energy policy, law and regulation
	Capacity of wind power installed	Installing 100 MW capacity in Dongola
	MWh of power generated by grid-connected wind energy	Generating of 300,917 MWh/year from wind energy

Main project stakeholders and key partners involved

Stakeholder engagement is an inclusive and continuous process between a project and those potentially impacted that encompasses a range of activities and approaches. It is arguably one

of the most important ingredients for a successful project delivery and therefore an essential element of this project.

The design of the WEP is based on multi-stakeholder engagement and consultations to ensure national institutional ownership of the project. The Project Document defines the following four key stakeholders important for development and implementation of power projects in Sudan:

- Ministry of Water Resources and Electricity (MWRE) [10] was the Government body responsible for electric power in Sudan, and the National Implementing Partner of the WEP, in particular for implementing the baseline wind power project, as well as being the main counterpart for the required policy and regulatory reforms.

- Higher Council for Environment and Natural Resources (HCENR) oversees application of environmental laws and regulations to all development projects in Sudan and has particular responsibilities in the climate change area. HCENR serves as the Designated National Authority (DNA) for the Clean Development Mechanism (CDM). It is also the focal point for the National Appropriate Mitigation Action (NAMA) Focal Point and UNFCCC Focal Point for Sudan.

- National Energy Research Centre (NERC) has been active in promoting and developing wind energy technologies for small-scale applications such as water pumping. NERC has a special department for wind and mini hydro equipped with instruments and a mechanical workshop.

UNDP Country Office (CO) as the GEF Implementing Agency was leading the project preparation process and provided implementation support and quality assurance services.

Table 2 below provides a list of stakeholders that were actively engaged in preparation of the WEP as well as their expected roles in the project implementation.

[10] In 2019 restructuring of the Government of Sudan, the Ministry of Water Resources and Electricity was split into Ministry of Energy and Mining and Ministry of Water and Irigation.

Table 2: Key WEP stakeholders and their envisaged responsibilities in the project

Stakeholder	Role
Ministry of Water Resources and Electricity – since 2019 Ministry of Energy and Mining	The principal role of MWRE/MEM is the implementation of Dongola wind farm and to formulate policies, strategies and action plans for the supply of electricity in Sudan, with a key focus on diversifying Sudan's electricity mix to include renewables. MWRE will be responsible for implementing the project.
Renewable Energy Directorate, Ministry of Petroleum	The Renewable Energy Directorate is carrying out extensive wind energy resource mapping along the Red Sea coast that will provide input for the future development of wind farms in the Red Sea region.
Higher Council for Environment and Natural Resources (HCENR)	As the Government Coordinator for climate change under the UNFCCC, HCENR is responsible for coordinating National Communications, the development of Climate Change Action Plans, NAPAs, Technology Needs Assessments and NAMAs. As the focal point for UNFCCC, HCENR is the official Government entity responsible for NAMAs. A study recently completed by HCENR that recommends wind energy being developed as a NAMA. Accompanying the development of NAMAs, HCENR has a specific plan to develop a Low Emission Development Strategy for Sudan as an umbrella structure for NAMAs. Further, HCENR is the Designated National Authority (DNA) and is central to carbon finance activities in Sudan. HCENR is also responsible for assessing EIAs and SIAs for wind farm developments in Sudan in accordance with the Environment Protection Act.
National Energy Research Centre (under the Ministry of Science and Technology)	NERC is the primary institute at the national level for conducting research on renewables in Sudan, as well as pilot project implementation. NERC is also involved in all climate change-related studies that are completed under the UNFCCC.
Ministry of Environment, Forestry and Physical Development (MEFPD)	The Under-Secretary of MEFPD is the GEF Operational Focal Point. HCENR is a part of the MEFPD.
UNDP CO	Provides support services that can include contracting a responsible party on behalf of the IP, or providing procurement, recruitment, payment, as well as quality assurance services.

Description of the project's Theory of Change

A project's theory of change provides a basis for evaluation of the project resources, activities and results. The terminal evaluation assesses description of the project's theory of change including description of the project's outputs, outcomes, intended long-term environmental impacts of the project, causal pathways for the long-term impacts as well as implicit and explicit assumptions.

There is no explicit theory of change in the Project Document that would demonstrate the relation between individual project components. The WEP design is based on the De-risking Renewable Energy Investment (DREI) methodology, developed by UNDP[11]. The theory of change underlying the DREI methodology is that one of the principal challenges for scaling-up renewable energy (RE) in developing countries is to lower the financing costs that affect renewables' competitiveness against baseline technologies – i.e., primarily fossil fuels. As these

[11] De-Risking Renewable Energy Investment: A Framework to Support Policymakers in Selecting Public Instruments to Promote Renewable Energy Investment in Developing Countries, UNDP, (2013),

higher financing costs reflect barriers and associated risks in the investment environment, the key entry point for policymakers to promote RE is to address these risks and thereby lower the overall life-cycle costs of RE systems. Taking this approach, the DREI methodology allows policymakers to quantitatively compare different packages of measures to promote renewable energy and to compare their cost-effectiveness.

Total resources

The GEF grant approved for the WEP amounts to US$ 3,536,364 complemented with US$ 213,950,000 expected parallel financing by several stakeholders (the Government, private sector, UNDP). The total amount of resources committed to the WEP at inception was thus US$ 217,486,364.

FINDINGS

Project Design/Formulation

This section provides a descriptive assessment of the achieved results. In addition, several evaluation criteria are rated in line with the requirements for Terminal Evaluations for UNDP/GEF projects.

Analysis of the project results framework

This section provides a critical assessment of the Project Results Framework (PRF) in terms of clarity, feasibility and logical sequence of the project outcomes/outputs and their links to the project objective. It also examines the specific indicators and their target values in terms of the SMART[12] criteria.

The PRF comprises 4 substantive outcomes and total 14 outputs. For measurement of achievement of the planned results, the PRF contains 13 indicators formulated at the level of the project outcomes and their corresponding end-of-project (EOP) targets.

The evaluators found the project objective and outcomes clear and well-structured with a majority of the indicators clearly linked with the results they are supposed to measure. However, as there are no mid-term targets and the EOP targets do not contain timelines for their achievement, the PRF does not provide enough guidance to the project team for prioritization of the activities to be implemented and outputs to be delivered first in order to facilitate delivery of other outputs.

However, the evaluators consider formulation of Outcome 1 and its targets as the main insufficiency of the project design. Outcome 1 was based on assumption to jump from the baseline situation of no investments in wind projects and weak normative framework for grid-connected renewable energy projects to commissioning of the 100 MW grid-connected wind farm at Dongola (Target 1.1) and installing 4 more wind farms of additional combined 220 MW capacity (Tokar and Port Sudan (180 MW), Nyala (20 MW) and Khartoum (20 MW)).

Despite all the above baseline investment projects had been at various stages of preparation at the WEP inception, only the single Dongola wind project relied heavily on co-financing in the form of foreign direct investments at the level of US$ 213 million. It was highly unlikely to secure such huge investment for realisation of the baseline projects as at the project inception Sudan had been in continued arrears to the International Development Association (IDA) for more than two decades and at the time of the WEP preparation the country had lost a substantive part of the state budget income following the secession of South Sudan.

In addition to the non-existent grid code for connection of RE projects, there were several gaps in the baseline institutional framework and related capacities for promotion and approval of renewable energy projects in general and wind energy projects in particular.

[12] SMART stands for Specific, Measurable, Attainable, Relevant, Time-bound.

Apart from the overambitious EOP target for the installed grid-connected wind energy production capacity, the WEP designers calculated the EOP target in terms of cumulative energy substituted as 300,917 MWh/year generated from wind energy. The setting of this target did not follow the relevant guidelines for calculating benefits of GEF RE projects[13] that state that if investment into a GEF RE project are not part of the project itself then the installed power generation capacity should not be set as a direct GEF project result target but subsumed under indirect benefits of such project. Clearly the WEP design does not comply with the clear-cut criterion for estimation of direct benefits of GEF projects, namely the inclusion of the investment in the logframe of the GEF project as part of the project's success indicators.

Given the above, the evaluators conclude that the formulation of Outcome 1 and its targets that were transposed to the Project Objective was overambitious, unrealistic, and methodologically incorrect.

Assumptions and risks

Identification of risks enables the implementing partners to recognize and address challenges that may limit the ability of the project to achieve the planned performance outcomes.

A preliminary risk analysis was conducted at the Project Identification Form (PIF) stage and identified 4 types of risks to achievement of the project objectives. The PIF also provided risk rating on a simplified rating scale (low-medium-high) and corresponding mitigation measures.

Section 8.1 of the Project Document contains an expanded risk analysis with risk rating in terms of probability and impact that allows for identification of critical risks (high in both probability and impact) for the purpose of further monitoring during the project implementation.

The summary of project risks identified in the Project Document is in Table 3 below.

[13] Manual for Calculating GHG Benefits of GEF Projects: Energy Efficiency and Renewable Energy Projects, GEF/C.33/Inf.18 (2008)

Table 3: Summary of project risks and mitigation measures

No.	Risk Description	Risk type	Rating*	Risk mitigation measures
1.	Security restrictions may prevent access to certain areas for implementation of projects.	Political	P = 2 I = 3	Advice on secure travel routes within Sudan. An escort from MWRE will be provided where necessary.
2.	Lack of policy basis to catalyse adoption of wind energy	Financial	P = 2 I = 5	UNDP will rely on close relations with MWRE and other counterparts. The project supports existing government policy to encourage renewable energy and bring private developers into the market.
3.	Slow uptake of wind energy by market participants.	Operational	P = 2 I = 4	There is considerable interest in investment in Sudan, in particular by countries in the region which already have large agricultural projects in Sudan. Investment in infrastructure is seen as a means to support their other investments
4.	Lower than anticipated electricity output of the RE plants installed	Operational	P = 2 I = 3	Consultants hired for the project will be tasked with studying and emphasising appropriate technology for the ambient environment
5.	Lack of financial incentives and subsidised electricity will mean limited incentive for the widespread use of wind power	Financial	P = 3 I = 4	The fuel savings, per kilowatt hour, from fossil fuel plants is comparable to the generation cost of wind. Therefore, the Government can direct present resources spent on fossil fuel to purchasing or financing wind power.
6.	Reduced information on the reaction of the market to the measures implemented	Operational	P = 2 I = 2	Close cooperation with the main participants in the local wind energy market and MWRE to obtain the required data through robust MRV arrangements and GHG monitoring for estimation of avoided costs (fuel imports, avoided thermal generation capacity, etc.).
7.	Inadequate and/or non-capacitated human resources to successfully implement the project and support the mainstreaming of its results	Operational	P = 1 I = 5	The project includes significant capacity building and outreach components to help overcome this risk. The project will use the individuals trained to implement power plants under the project.
8.	Adverse impacts on local communities or ecosystems disrupt implementation or jeopardise funding (e.g. from international development banks and donors)	Environmental /Social	P=2 I=3	This can be mitigated in part through collaboration with the UNDP-implemented, GEF-financed biodiversity project on migratory soaring birds
9.	A shift in wind patterns due to global warming could adversely affect the wind farms	Environmental	P=2 I=2	Consideration of long-term wind patterns and expected shifts as a consequence of warming should be taken into account when the wind farms are planned.
10.	Wind farms may disturb settlers by causing noise or light flicker	Social	P=1 I=2	Wind farms should only be sited on areas sufficiently far from populations to avoid disturbance

*I=impact, P=probability, both rated on a 5-point scale (low to high)

The evaluators found the risk identification at the project inception sufficiently detailed. The risk rating was also found reasonable with the exception of risk No. 3. that should have been rated higher on probability. However, the suggested risk mitigation measures were in some cases insufficient (e.g. for risks Nos. 2, 3 and 5). In particular, it could have been expected that delays in implementation of the baseline investment project would have a highly negative impact on the WEP progress as the expected benefits in terms of energy production and GHG emission reductions from the baseline project are basis for achievement of Project Objective.

In line with standard UNDP requirements, the highly rated risks (5 in terms of impact or when impact is rated 4 and probability at 3) are considered as critical risks and should be further monitored and annually reported. This practice was not followed during the WEP implementation as the Project Implementation Reports (PIRs) do not contain any information on risk monitoring and management.

Lessons from other relevant projects incorporated into project design

Prior to the WEP, there was one GEF-financed project on RE in Sudan titled "Barrier Removal to Secure Photovoltaic (PV) Market Penetration in Semi-Urban Sudan" that was implemented in November 1999-December 2005. The project aimed at strengthening the institutional and technical capabilities of the GoS and other relevant stakeholders, building of sustainable financing modalities and assisting in building policy frameworks favorable to widespread use

of the solar PV technology in Sudan. The WEP Project Document does not mention any lessons from the above cited or any other previously implemented project.

Planned stakeholder participation

The Project Document provides an outline of key stakeholders involved in preparation of the project including their expected roles the project. The planned stakeholder participation is satisfactory in identification of the stakeholders and justification of their involvement in the project, but the stakeholder analysis does not go deeper into distinction between core (primary) and secondary (tangential) stakeholders.

It was expected that Government stakeholders would play key roles in legislation, management, monitoring of the project progress and communication of its results. The expected main entry point for involvement of the GoS stakeholders was participation in meetings of the Project Board through which the Government stakeholders assume an active role in the decision-making for effective and efficient implementation of the project.

Linkages between the project and other interventions within the sector

There were no other interventions related to wind energy during implementation of the WEP.

Social and Environmental Safeguards

The Project Document does not contain a Social and Environmental Screening Report as the the Social and Environmental Screening Procedure was not conducted during the project preparation.

Project Implementation

Adaptive management

GEF evaluations assess adaptive management in terms of the ability to direct the project implementation through adapting to changing political, regulatory, environmental and other conditions outside of control of the project implementing teams. The adaptive approach involves exploring alternative ways to navigate the projects towards meeting the planned objectives using one or more of these alternatives.

The main adaptive management decisions were taken following the MTR that recommended modification of Outcome 1 and suggested to examine the following four options for the project immediate intervention.

1. Pursue central government baseline project funding;
2. Change the scope and reallocate a major part of Outcome 1 budget of the WEP for funding of a 1 MW grid-connected wind demonstration plant;
3. Change the scope to support small scale wind energy for water pumping;
4. Change the scope to support small scale wind energy for demonstration at universities

According to the management response to the MTR, the MWRE/MEM started negotiations with national and international companies to establish a 5 MW plant instead of the original 100 MW one. However, this downscaling proved not realistic. Finally, the option No. 2 to establish a demonstration 1 MW wind turbine with support from the project funds was selected,

approved by the Project Board Committee and pursued for the remaining part of the project. However, it took about one year to reach consensus for adoption of this decision and this further added to other delays in implementation of the project.

The evaluators consider this as a sound step in adaptive management of the project as it kept the project still within the original project objective. However, the EOP targets under Outcome 1 were not revised thoroughly, in particular Target 1.1 about expected GHG emission reductions. Options No. 3 and 4 would substantively change the project scope as from grid-connected to small scale off-grid wind energy projects.

Actual stakeholder participation and partnership arrangements

The project is based on a multi-stakeholder approach and participation of the GoS as well as the private sector. The project interventions involved several agencies of the central government and the Government of the Northern State that fully supported the objectives of the project. The engagement of core stakeholders was ensured primarily through the PSC meetings where the core project stakeholders executed an active role in project governance and decision-making.

Engagement of tangential (peripheral) stakeholders was ensured through their participation in specific activities and events organized by the PMU and involvement of universities under Outcome 3. There is a lot of published outputs on the project website that can be of significant benefit – especially as teaching/learning materials for university students.

The evaluators found the actual stakeholder participation in line with the original stakeholder engagement plan and did not observe any major challenges for stakeholder engagement in the project.

Project finance and co-finance

Analysis of the project financial aspects was based on the information sourced from the annual Combined Delivery Reports (CDRs) for the years 2015 – 2020 and two quarterly CDRs for 1st and 2nd quarter of 2021. This analysis aims at assessment of project financial delivery by years and by products, and the share of the project management budget line in the total budget.

The GEF grant for this project was approved at US$ 3,552,968 and together with expected co-financing of US$ 65,382,640 the total cost of the project at inception was US$ 68,935,608. Table 4 below displays the breakdown of expenditures from the GEF grant by the years of the project implementation period.

Table 4: Actual expenditures by years of implementation (as of 30 November 2021)

Project Component	Actual Expenditures (US$)							
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2015-2021**
Outcome 1	70,349.88	86,978.22	16,797.20	2,492.58	391,143.46	1,490,612.01	296,678.84	2,355,052.19
Outcome 2	56,270.36	89,327.54	63,097.17	30,776.97	62,411.15	32,516.53	139.62	334,539.34
Outcome 3	24,172.99	36,881.73	97,542.19	179,433.81	54,889.16	65,166.82	-	458,086.70
Outcome 4	24,587.38	23,763.71	28,069.77	971.1	36,084.94	27,671.93	345.45	141,494.28
Project Management	34,136.23	32,218.62	83,115.86	-24,411.38	5,645.82	8,344.55	-	139,049.70
Unrealised Loss/Gain	1,386.78	50,512.96	34,220.41	20,234.55	-366.18	-	-	105,988.52
Total	**274,049.49**	**319,682.78**	**322,842.60**	**209,497.63**	**549,808.35**	**1,624,311.84**	**297,163.91**	**3,534,210.73**
%	7.75	9.05	9.13	5.93	15.56	45.96	8.41	100.00

It follows from Table 4 that the total expenditure from the GEF funds at the project closure was US$ 3,534,210.73 that is 99.94% of the total GEF grant. Furthermore, the data show slow start of the project implementation as only less than one third of the GEF grant (31.86%) was expended during the first 4 years of the project. Almost half of the GEF grant (45.96%) was disbursed during the single year 2020, mainly as payments under the contract for supply and installation of the wind turbine.

Table 5 below provides comparison of the planned and actual expenditures by the project components.

Table 5: Planned and actual disbursement of the GEF funds by components – as of 30 November 2021

Project Component	Budget (US$)	Expenditures (US$)	%
Outcome 1	2,391,864	2,461,041.19	102.89
Outcome 2	377,410	334,539.34	88.64
Outcome 3	420,000	458,086.70	109.07
Outcome 4	180,000	141,494.28	78.61
Project Management	167,090	139,049.70	83.22
Total	**3,536,364**	**3,534,211**	**99.94**

The figures in Table 5 show relatively even delivery under individual components of the project with only expenditures under Outcome 3 exceeded the planned amount while disbursements for Outcomes 2 and 4 did not reach the planned amounts (88.64% and 78.61%, respectively).

The data in Table 5 further show that the budget allocation on project management was less than 5% (4.72%) of the GEF grant, in line with the relevant policy on budgeting for GEF-funded projects. Actual expenditures from the GEF grant on project management reached only 83.22 % of the planned amount (3.93% of the GEF grant).

Overall, the above financial data prove that a well-established financial management and control system was in place during the entire project implementation period based on assistance of the UNDP CO finance office to the PMU.

The project was designed to attract co-financing from several stakeholders that belong exclusively to the national Government. No co-financing contributions were committed from the private sector and academic institutions. Figures from Section 3.2 of the Project Document are taken further for analysis of the co-financing. Table 6 below compares the planned co-financing at the project inception with the actually realized co-financing at the completion of the project.

Table 6: Comparison of planned and actual co-financing by source in 2015-2021 (US$)

Co-financing partner	At inception (US$)	At TE (US$)
UNDP	250,000	582,196
MWRE/MEM	213,000,000	1,873,000
MoP	250,000	0
HCENR	200,000	200,000
NERC	250,000	350,000
Total	**213,950,000**	**3,005,196**

It follows from Table 6 above that the majority of co-financing was expected to be leveraged by the MWRE /MEM for the 100 MW baseline project at Dongola. Despite efforts of the GoS, this co-financing did not materialise. Hence, the total actually realised co-financing at TE is only a tiny fraction of the expected amount. Nevertheless, UNDP CO actually exceeded more than twice the pledge from the project inception.

In addition to already paid US$ 800,000 for construction of the access road to the Dongola site, there are obligations for civil works for the wind turbine installation. According to the estimations by the PMU, the expected cost of the civil work for the circular concrete basement for fixing the wind turbine is almost US$ 900,000 and further about US$ 110,000 is the cost of continued project management until handover of the wind turbine to the operator. In addition to 70,000 paid as demurrage for the ship transporting the wind turbine due to the delay in handling the equipment at Port Sudan and US$ 3,000, for the crane transportation. These additional expenditures of US$ 1,073,000 will be provided by the GoS and therefore could be considered as additional co-financing contribution.

Although the co-financing on top of the GEF grant is a mandatory condition for approval of GEF projects, the PMU did not systematically monitor the actual levels of co-financing throughout the project implementation. Consequently, the information on the actually realized co-financing amounts was not readily available for the Terminal Evaluation.

Monitoring and evaluation: design at entry and implementation

For the assessment of the M&E framework, the evaluators reviewed some of the project documentation related to monitoring and reporting, including the Project Document, Annual Progress Reports (APRs), as well as GEF Project Implementation Reports (PIRs).

M&E design at project entry

The Monitoring & Evaluation (M&E) Framework is in details described in Section 6 of the Project Document. It comprises of standard M&E items such as the Inception Workshop (IW),

meetings of the PSC, annual Project Implementation Reports (PIRs), regular monitoring through site visits, the Mid-Term Review (MTR) and the Terminal Evaluation (TE).

The total indicative cost for the M&E plan (excluding the project team staff time and UNDP staff travel expenses) is US$ 93,000, i.e. about 2.6% of the GEF grant that is considered sufficient for projects of this size and complexity.

The evaluators found the design of M&E framework well-articulated and in line with the standard M&E plan template for GEF projects. The M&E plan in the Project Document did not specify the ways to inform and eventually involve the GEF OFP about the project progress. However, this is implicitly addressed in the elaboration of the annual PIRs as the assessment of project progress is expected from the GEF OFP.

Overall, the evaluators found the M&E design adequate for monitoring the project results and tracking the progress toward achieving the project outcomes. Therefore, the M&E design is rated **Satisfactory (S).**

M&E at implementation

The main subject of the discussion here is the implementation of the originally planned components of the M&E plan. For the assessment of the M&E framework, the evaluators reviewed some of the project documentation related to monitoring and reporting, including the Project Inception Report, Minutes of the Project Board, annual CDRs and annual Project Implementation Reports (PIRs).

Inception Workshop

The Project Document stipulated that a project Inception Workshop (IW) should be held within the first 2 months of project start to help the relevant stakeholders of the project to build ownership of the project and its planned results, approve the project's first Annual Work Plan (AWP), agree on the monitoring & evaluation work plan and budget, as well as to elaborate on the financial reporting procedures and obligations.

There is no report from the Inception Workshop available, so it is not possible to assess the timing of the IW and discussion of the substantive issues related to project implementation. According to the Minutes of the 2nd meeting of the Project Board held on 18 May 2015, the Project Manager, presented the project objectives, outcomes, and the work plan with the budget for the year 2015. The PM clarified that the actual start of the project was April 2015 hence the annual work plan (AWP) for 2015 covered the period April - December 2015. The AWP was compiled according to the project activities stated in the four outcomes and included quarterly activities with indicators for implementation by the PMU and evaluation by the Technical Committee (TC). In general, the TC was expected to review and approve the level of implementation quarterly and approve it the plan for the next three months.

Annual Project Reports/Project Implementation Reviews (APRs/PIRs)

The most important instrument in the monitoring process were the Project Implementation Reviews (PIRs) prepared regularly with annual periodicity at the end of each GEF fiscal year (July to June). Total 6 PIRs were prepared for the GEF fiscal years 2016 to 2021. The PIRs were elaborated in a standard uniform structure and contain detailed reporting on progress

towards performance targets at outcomes as well as the project objective levels. In line with the UNDP/GEF requirements, PIRs also contain assessment and ratings of the project progress provided by the NPM, UNDP CO, the project Implementing Partner and the UNDP RTA.

In line with the UNDP/GEF requirements, the PIRs are supposed to contain assessment and ratings of the project progress by the PM, UNDP CO, the project Implementing Partner, the GEF OFP and the UNDP RTA. The actually given ratings in the annual PIRs are summarized in Table 7.

Table 7: Summary of PIR ratings by the project partners[14]

PIR	PM		UNDP CO		MWRE		UNDP RTA	
Year	DO	IP	DO	IP	DO	IP	DO	IP
2018					-			
2019	MS		MS	MS	-		MU	MU
2020	MS		MS	MS	MS		MU	MU
2021	-		S	S	-		MU	MS

The evaluators observed that the assessments of progress were provided by the PM, the UNDP CO and the UNDP RTA while the MWRE provided the assessment only sporadically and there was no assessment of progress by the GEF OFP at all. Furthermore, the ratings given by the PM and UNDP CO were systematically one grade higher than the ratings by the UNDP RTA who justified the ratings by slow progress made under Outcome 1 and a very low financial delivery for the entire project.

The evaluators found the PIRs compliant with the standard UNDP/GEF project cycle reporting tools and particularly detailed. Apart from a large section on development progress provided by the Project Manager, the PIRs also contain concise summaries on implementation progress, management of critical risks, adjustments to project implementation plans and description of cross-cutting issues.

Site visits and on-site inspections were also part of the project M&E plan and were defined in the annual workplan. The site visits of the project team were documented in the Back-to-Office-Reports (BTOR).

Mid-Term Review (MTR)

The Project Document required the MTR to take place at a mid-point of the WEP implementation and determine progress made toward the achievement of outcomes, make assessment of efficiency and timeliness of project implementation as well as highlight issues requiring decisions and corrective actions.

The MTR was conducted by a team of one international and one national consultant. The MTR team conducted field mission to Sudan in October 2017. The MTR report was completed in December 2017.

[14] DO = Development Objective Progress, IP = Implementation Progress

Terminal Evaluation (TE)

The Project Document stipulated that the TE should be conducted at least three months prior to the project completion date.

The TE was finally commissioned by the UNDP CO in June 2021 and conducted in November 2021 – January 2022.

Feedback from M&E activities used for adaptive management

The primary feedback from the M&E activities was provided through the Quarterly and Annual Project Reports prepared by the Project Manager. Five APRs were prepared for the years 2016-2020 in a standard format following the UNDP Atlas Project Progress Reports (PPR) with updated information for each outcome as well as a summary of financial management of the project. The APRs were discussed at the NSC meetings.

The Mid-Term Review (MTR) produced 5 recommendations. The guidance for undertaking Midterm Reviews (MTRs) of GEF-financed UNDP-supported projects requires that MTR recommendations are provided as succinct suggestions for interventions that are specific, measurable, achievable, relevant, and timely. However, the structure and content of the MTR recommendations are not in line with the commonly accepted evaluation standards[15]. In fact, the MTR recommendations are mixtures of findings, conclusions, and recommendations where the actual recommendation is not immediately and clearly visible. Also, some recommendations are rather vague in description of the required actions and none of the recommendations identifies the recipients expected to implement the recommendations.

The MTR findings were presented in the Project Board meeting in October 2017. The follow-up PB meeting in January 2018 endorsed the implementation of the MTR recommendation #1 on financing of the 1 MW demonstration wind project at Dongola from the WEP budget. The minutes from the two meetings indicate that the PB accepted the MTR findings. However, endorsement of other MTR recommendations and of the MTR report as a whole was not mentioned.

In line with the standard procedures, UNDP as the implementing agency prepared a management response to the MTR recommendations in the form of an action plan on the MTR recommendations that was completed in January 2018.

According to the status update at the UNDP Evaluation Resource Centre, a majority of the key actions have been completed before the operational closure of the project. The MTR recommendations with corresponding management response actions are summarized in Table 8 below.

[15] Improved Quality of Evaluation Recommendations Checklist, United Nations Evaluation Group (UNEG), 2018

Table 8: Summary of MTR recommendations and management response

#	Essence of the Recommendation	Management Response – Key Actions	Status
1	Outcome 1: The baseline project site needs to be preserved, protected or safe guarded from any encroachment from urban development and agricultural activities as it currently isn't enclosed.	To avoid the risk of weaning demand for wind energy (and renewable in general), build up an awareness raising on short to medium term risk aversion considerations must be done and a decision on which scope option to follow/take be done as soon as possible	Completed
2	Outcome 1: The establishment of the baseline project and progress on activities related to outcome 1	1. MWRE to continue seeking financial support for the establishment of the baseline project from local resources. 2. Consider the 4 options provided by MTR for discussion with RTA and GEF.	Completed
3	Outcome 2: Resolve the slight technicalities mentioned about a standardized FiT that makes it attractive for private sector invest to enter the market at various scales.	Recruit international consultant to review the FiT, study the context and fill the technical gaps.	Completed
4	Outcome 3: Build localized skills, capacity and expertise at a national level on aspects of (1) wind energy planning; (2) wind assessment software; (3) Designing and assessing wind energy.	Support Sudan universities and research institutions with climate monitoring systems and modeling	Completed
5	Outcome 4: Apply adaptive learnings to be drawn out and that the replication plan factors the risk of changing context of Sudan and how it can be mitigated	Risk and issues factors to be updated in the system and initiate discussion on how mitigate it for future projects design and implementation	Completed

The above discussion about the design of the M&E plan and implementation of its individual stages gives basis for the rating of the M&E plan as summarised in Table 9 below.

Table 9: TE ratings of the M&E plan

Monitoring & Evaluation	TE Rating
M&E design at entry	Satisfactory (S)
M&E plan at implementation	Moderately Satisfactory (MS)
Overall quality of M&E	**Moderately Satisfactory (MS)**

UNDP and implementing partner implementation / execution

The legal framework for implementation of the WEP is the Standard Basic Assistance Agreement between the Government of Sudan and UNDP. The project was designed for the National Implementation Modality (NIM) with the Ministry of Water Resources and Electricity (MWRE) as the national designated Implementing Partner executing the project on behalf of the Government of Sudan having the following main responsibilities:

- Assumes full responsibility for the effective use of UNDP resources and the delivery of outputs stipulated in the signed Project Document;
- Reports on project progress against agreed work plans in accordance with the reporting schedule and formats included in the project document; and

• Maintains documentation and evidence of the proper and prudent use of project resources in conformity to the project document and in accordance with applicable regulations and procedures.

The actual implementation modality was NIM with UNDP support according to valid UNDP policy[16]. Under this arrangement, the UNDP CO in Sudan provided implementation support through procurement of goods and services (equipment, international and local consultants) as requested by the MWRE. Moreover, the UNDP CO maintained the oversight and management of the overall project budget, responsibility for monitoring of the project implementation, preparation of obligatory reports to GEF, and for organising mandatory evaluations.

A Project Board (PB) was established at the project inception to provide strategic guidance to the project implementation as well as an oversight function in relation to achievement of the project outputs and use of the project resources. The PB was chaired by a MWRE representative and consisted of key project stakeholders. In addition, a Technical Committee (TC) was established with membership of a wider circle of stakeholders, including academia and private sector.

The summary of the PB and TC meetings is provided in Table 10 below.

Table 10: Summary of PB and TC meetings

Name	**Meeting dates**
Project Board	18 February 17 May and 17 December 2015, 17 January 2017, 4 January 2018, 15 January 2019, 25 November 2020
Technical Committee	8 July and 5 November 2015 1 February, 12 May, 18 August and 20 November 2016 23 February, 30 April, 27 August and 10 October 2017 10 April 2018, 7 January 2019, 9 December 2021

There was a good complementarity between the PB and TC. In general, the Project Board meetings were devoted to strategic issues including co-financing for the baseline project while the TC meetings were more operational and discussed project implementation reports for a preceding period, work plans for a forthcoming period and various technical and operational issues.

A Project Management Unit (PMU) was established composed of the Project Manager, 2) Technical Assistants, 3) A financial officer, and logistics officer. In addition to the UNDP CO support services, the UNDP rendered services of a Regional Technical Advisor for technical oversight and backstopping of the project implementation.

However, the project had total 4 RTAs since its inception. The first two RTAs were based in the Istanbul Regional Hub (IRH). After departure of the 2nd RTA in early 2017, an external consultant based in London was appointed for several months as interim RTA until the arrival of the current RTA after the completion of the MTR. Since then, there was a good working relation between the PMU, the UNDP CO and the UNDP RTA.

[16]UNDP Programme and Operations Policies and Procedures: UNDP Support Services to National Implementation (NIM), 2015

The rating for the UNDP/IP execution is given in Table 11 below.

Table 11: TE rating of the UNDP Implementation/Oversight & Implementing Partner Execution

UNDP Implementation/Oversight & IP Execution	TE Rating
Quality of Implementing Partner Execution	Satisfactory (S)
Quality of UNDP Implementation/Oversight	Satisfactory (S)
Overall quality of Implementation/Oversight and Execution	**Satisfactory (S)**

Project Results and Impacts

This part of the TE report contains an assessment of results as measured by broader aspects such as: relevance, effectiveness, efficiency, country ownership, gender equality and other cross-cutting issues, sustainability, catalytic role, and progress to impact.

Relevance

The questions discussed under this section are to what extent is the project linked to Sudan's international commitments in the field of climate change, the relevant GEF Operational Programme, the strategic priorities of UNDP in the country and the UN Sustainable Development Goals.

The WEP is in line with Sudan's commitments under the United Nations Framework Convention on Climate Change (UNFCCC). Sudan is the non-Annex I Party to the UNFCCC since it had ratified the UNFCCC in November 1993. It had also ratified the Kyoto Protocol in November 2004 and the Paris Agreement in August 2017.

Although the 2nd National Communication to the UNFCCC, submitted in 2013, does not mention renewable energy potential for electricity generation amongst the key mitigation options quantified in the GHG mitigation assessment, it suggested that renewable energy resources (solar, hydro, wind, and geothermal) should play a supportive future role for achievement of economic development goals. The 3rd NC is expected

The Renewable Energy Master Plan (REMP), formulated in 2005 under the UNDP/GEF project 'Barrier Removal for PV Market Penetration in Semi-Urban Sudan', recognises that Sudan is endowed with diverse energy resources, ranging from biomass to hydro, solar, wind and geothermal, and calls for the use of these renewable energy sources to ensure the energy security of Sudan and to enhance access to electricity. In particular, REMP recommends the development of large-scale wind power over a near-term time horizon, highlighting the potential of the Red Sea coast in particular, based on the experience of wind farm installations on the Red Sea coast in the neighbouring Egypt.

Furthermore, the WEP is well aligned with the National Clean Development Mechanism (CDM) Strategy that was formulated in 2011 to promote low-carbon projects through the CDM. The strategy identified wind energy as the most promising renewable energy option in the short-term (i.e. within the next 5 years).

The WEP is also well aligned with the Sudan Intended Nationally Determined Contribution (INDC) submitted in response to the Paris Agreement. The INDC enlists integration of renewable energy in the power distribution system as a priority intended climate mitigation contribution and grid-connected wind energy is mentioned on a prominent position in the document. The interim update of the INDC, submitted in May 2021, reiterates the strong commitment to renewables by listing utility scale grid-connected wind power plants under the measures proposed for transformation of the national electricity sector towards low-emission power generation.

The WEP is also well aligned with the GEF strategies for climate change mitigation programming. The GEF Operational Strategy (1995) and Operational Programmes (developed from 1996 to 2000) that served as the basis for programming for GEF-1 and GEF-2 emphasized removing barriers to broader adoption of renewable energy technologies. The GEF-3 strategic priorities began to shift the focus upstream toward creating conducive policy and market environments for technology diffusion.

The GEF-5 Focal Area Climate Change Mitigation promotes a broad portfolio of environmentally sound, climate-friendly technologies to achieve large GHG reductions in GEF-recipient countries in accordance with their respective national circumstances.

Specifically, the project is in line with the following elements of the GEF-5 CCM Focal Area:

Objective 1: Promote the demonstration, deployment, and transfer of innovative, low-carbon technologies

Objective 3: Promote investment in renewable energy technologies

Objective 6: Support enabling activities and capacity building under the UNFCCC

Renewable energy has also been high amongst corporate priorities for UNDP. The UNDP Strategy Note on Sustainable Energy 2017-2021 defines actions to support governments in transforming their RE markets and removing barriers to renewable energy investment and creating favourable conditions for private sector involvement.

The WEP is also aligned with the UNDP Country Programme Action Plan (CPAP) for Sudan (2013-2016). Under the CPAP Focus Area 4: Environment, Energy and Natural Resource Management contains the following output:

"Investment in "green" energy and access by needy communities to sustainable energy improved"

Under the above output, UNDP intended to promote investment in green energy and enhance access by needy communities to sustainable electrification through support to the development and implementation of the first grid- connected wind energy plant in the country, and solar mini- grids for different off- grid rural areas, considering past lessons learned and successful replicated experience.

In relation to the UN Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development, renewable energy is being recognized as a key enabler for development through establishment of SDG Goal 7: *Ensure access to affordable, reliable, sustainable and modern energy for all.* Its indicator 7.2 calls to increase substantially the share

of renewable energy in the global energy mix. Universal access to energy and a higher share of renewable energy are now part of the top global priorities for sustainable development. In addition to direct relation to SDG7, renewable energy is indirectly related to other SDGs as summarized in Table 12 below.

Table 12: Relation of renewable energy to UN SDGs[17]

Sustainable Development Goals	SDG Targets Relevant to Renewable Energy
7. Ensure access to affordable, reliable, sustainable, and modern energy for all	7.1 Ensure universal access to affordable, reliable and modern energy services 7.2 Increase substantially the share of renewable energy in the global energy mix
Other SDGs:	Relevance of RE
1. End poverty in all its forms everywhere	Rise of the RE sector creates jobs and income generation for small businesses
2. End hunger, achieve food security and improved nutrition, and promote sustainable agriculture	RE is needed for irrigation increasing agricultural productivity as well as for processing of agricultural products (e.g. cooling, drying, milling, pasteurizing)
3. Ensure healthy lives and promote well-being for all at all ages	RE is a key component for functional health care facilities in rural areas for refrigeration of vaccines and medicines, equipment sterilisation and light for operations and emergencies at night
4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	RE services reduce the working time and provide more free time to especially women and children, and also enable the use of modern communication and learning tools
5. Achieve gender equality and empower all women and girls	Modern energy services reduce the time spent by women and girls on basic survival activities (gathering firewood, fetching water, cooking, etc.)
6. Ensure availability and sustainable management of water and sanitation for all	Water purification and desalination using solar or wind energy could help to ensure access to clean drinking water
8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Production, selling, and installation of PV products and provision of related services creates jobs and small businesses. Access to energy facilitates enhanced productivity and inclusive economic growth.
9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	RE technologies contribute to reduction of CO2 emissions by industries
11. Make cities and human settlements inclusive, safe, resilient and sustainable	Access to energy helps to meet basic needs such as safe and healthy cooking and indoor and outdoor lighting, as well as improved household and ambient air pollution
12. Ensure sustainable consumption and production patterns	RE is crucial to reduce food losses along food supply and value chains via cold storage, drying etc. Renewable energy generation doesn't contribute to global warming, sun and wind energy are non-exhaustive compared to fossil fuels.
13. Take urgent action to combat climate change and its impacts	RE is one of the keys to combat climate change
15: Protect, restore, and promote sustainable use of terrestrial ecosystems, sustain- ably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	RE use for improved cooking reduces pressure on forests and thus help combat land degradation

[17] Compiled from Energy and the Sustainable Development Goals, www.energypedia.info

Based on the above, the relevance of the project for the recipient country, as well as the donor and implementing agencies is rated **Relevant (R).**

Progress towards objective and expected outcomes

The information presented in this section was sourced from the various WEP implementation reports and verified with information collected through interviews with key informants. Additional sources of information were various studies and technical reports produced by the project. The list of documents consulted is provided as Annex 4 to this report.

The principal questions to be discussed in this section are whether and how the WEP outcomes as well as its objective have been achieved and whether the project results have been delivered with the least costly resources possible. Eventually, the further text also highlights positive and negative, foreseen and unforeseen changes and effects induced by the project interventions.

In the series of tables below, the WEP results are summarized and compared against the target indicators listed in the project's logical framework. The initial information about the WEP results/achievements was extracted from the project's progress reports and verified and updated through interviews held during the data collection phase. Additional information was supplemented from the WEP-related documentation (such as consultants' technical reports, capacity building reports, etc.) provided by the PMU.

Tables 13 – 18 list the indicator targets for the individual results, summarize the delivery status at the Terminal Evaluation and provide rating for the individual project results' delivery. Each table contains a summary of the actually achieved project results in bullet points format. The tabular summary is followed by a short narrative text with additional insight and details on how and why the results have or have not been achieved. At the end, the narrative also explains the basis for rating of individual WEP outcomes. By this token, the text following each table summarizes some important facts related to the project results that could not be captured in the tables but were considered important for the justification of the rating of the project outcomes.

Table 13: Deliverables for Outcome 1

Result	Indicators	EOP Targets	Status at TE	Rating
Outcome 1: Grid-connected power generation from wind farm introduced	1.1 Megawatts of installed grid-connected wind power	100 MW of grid-connected wind power installed at Dongola wind farm	Land ownership certificate for the project site License for operation and electricity generation SETCO study for connection of the wind farm to the grid Contract for supply and installation of one 900kW wind turbine Delivery of the wind turbine and auxiliary equipment to the project site Civil and construction works as well as extension of the grid in progress	MU
	1.2 Number of wind farms operating in Sudan	Installing 4 wind farms (in line with plans of the Ministry of Water Resources and Electricity (MWRE)	Study on impact of wind parks on migratory birds along the Red Sea Coast Report on EIA for the Red Sea Wind Project	MU

Output 1.1: 1.1 Wind farm design, installation and operation of interface electronics in Dongola wind farm was completed such that islanding problems are avoided and grid stability is ensured

For implementation of preparatory works, MEWR in collaboration with the Government of the Northern State conducted necessary actions for initiation of the baseline wind project at Dongola. The first steps included issuance of a land ownership certificate for the project site and obtaining a license for operation and generation of electricity from the Electricity Regulatory Authority (ERA).

The preparatory work included installation of an 86-meter-high wind mast at the project site and construction of 4.7 km-long access road from the main highway to the site. Tendering for the access road work was conducted under grant financing equivalent to US$ 1,250,000 from the Ministry of Finance and National Economy. The project also contracted a wildlife expert to perform a study for EIA in relation to impact of the Dongola wind farm on migratory birds. The Sudanese Electrical Transmission Company (SETCO) prepared a study for electric connection of the wind farm to the grid.

Apart from the support for preparatory work and contracting, the WEP also supported conduct of a training module on wind farms and contracts management as well as another training for update of the existing grid factor. Furthermore, WEP representatives participated at the training programme on NAMA Academy Fall 2015 in Copenhagen, Denmark and in a workshop on grid integration of RE power generation systems in Amman, Jordan.

The WEP contracted Lahmeyer International[18] as a consultant company for preparation of tender documents, and supervision of implementation of the Dongola baseline project. The tendering process for the wind turbine supply and installation was launched in the 2nd quarter

[18] Since 2019, Lahmeyer International GmbH has been operating under the name Tractebel Engineering GmbH.

of 2019. Two bids were received under the tender from two bidders, namely the Goldwind, China, and Emergya Wind Technologies (EWT), Netherlands. The bid from the former company was selected following a technical and financial evaluation of the bids. However, Goldwind decided to withdraw their proposal due to technical issues related to ability of the available crane to handle the wind turbine erection and installation.

Contract negotiations with EWT were launched in December 2019 and completed with contract signature for supply and installation of one DW54 900 kW wind turbine in March 2020. This was followed by contracting local companies for civil and electrical balance of plant works.

The shipment of the turbine and auxiliary equipment was delayed due to COVID-19 outbreak and related restrictions. The on-site works commenced in December 2020. The shipment of the first item, namely the anchor for wind was planned in May 2020 but actually delivered in October 2020. Similarly, the delivery of the wind turbine and auxiliary equipment reached the project site in June 2021 instead of the originally planned date of November 2020.

In October 2021, the selected local Sudanese contractor casted the circular foundation reinforcement for the wind turbine. However, the respective tests for compressive strength and concrete core crushing strength of the mass concrete foundation taken at the beginning of November (28 days) and beginning of December indicated that the constructed mass concrete base was not up to the turbine supplier specification due to low quality of the used concrete with negative implications on the sustainability of the mass concrete foundation. .

The test results were reported to the project Technical Committee that, upon recommendation of the international technical consultant (Tractebel Engineering), decided to cancel the awarded contract for the mass concrete foundation and repeat the tender for this work.

In order to check the status of the construction and installation works, the national consultant visited the Dongola project site in January 2022. All the elements of the wind turbine were found on the project site along with a crane modified to handle the wind turbine elements for installation. The work on installation of the 16 km-long 33kV line from the wind turbine up to the entry point to the grid was found almost completed. The single outstanding part was the transformer to be connected during installation of the wind turbine. A contract for installation of fibre optics for telecommunications was awarded to a private engineering company that already started the work. The project site was found guarded by two guards living at the site.

According to the discussion of the NC with the on-site engineer and the WEP manager, the expected remaining time for completion of the project (i.e. until commissioning of the wind turbine) is about 6 months. It was reported that the Ministry of Energy secured the needed finance to complete the project including cost of the project management (to be performed by the current WEP PMU) until the commissioning of the wind turbine and handing over to the electricity generation company for operation.

<u>Output 1.2: Completed and approved replication and investment plan for the construction of additional wind farms in the Red Sea region prepared with the objective of catalysing new investment</u>

Apart from the Dongola wind projects, the GoS plans for installation of 180MW wind turbines in Toker town near the city of Port Sudan (the Red Sea Wind Project), and installation of 20

MW wind turbines in the isolated grid of Nyala city in Western Sudan. In June 2021, the GoS issued request for Expression of Interest for development of utility scale PV and wind power plants.

Resource assessment, environmental and social impact studies for the Red Sea project are ready and land was officially allocated for both projects.

A study on possible impact of onshore wind farms on migratory birds along the Red Sea coast was conducted under the WEP. Further contribution was expected form the UNDP-implemented GEF-6 project on migratory soaring birds.

The WEP also contracted a consultant for develop the Red Sea EIA. The consultant produced the final report and presented it to a validation workshop that was attended by relevant stakeholders.

Despite some progress in the preparatory work, both above projects did not commence the realisation phase due to lack of funding.

Overall Assessment of Outcome 1: The implementation of this part of the WEP was affected by three factors, namely the overambitious WEP design, lack of financing for the baseline wind project at Dongola, and delays in procurement of equipment.

Firstly, Sudan had no policy and regulatory frameworks in place to support private investments in renewable energy at the project baseline. Moreover, the available reports indicated that the total lead time for an onshore utility-scale wind power installation may be 2 years or more. Given these conditions, the evaluators conclude that the project plan to go from baseline 0 MW to the target 100 MW of private sector wind power generation was too ambitious and therefore unrealistic, even as the planned phased installation over the 5-year project period.

Secondly, the project was designed on expectation of financing for the baseline wind project at Dongola by a loan from the Government of China. This model followed the overall expansion of China's investment into RE projects in Africa that had started at the end of the 1st decade of the current century. The financing of the baseline wind project was founded on a mechanism of the Chinese loan repayment from oil revenues that had been quite high in Sudan at the time of the project preparation. However, the secession of South Sudan in 2011 caused a massive loss of the oil revenue of the GoS. Therefore, the financing model incorporated into the project design was no more realistic and China abandoned its plans for investment in the wind energy in Sudan.

Last but not least, after the decision was taken to reprogramme the budget of Outcome 1 for financing of the 1MW demonstration wind turbine, the procurement of equipment was slow because of limited institutional capacity for procurement of such big items, starting from delays in development of technical specifications and ending with slow pace of technical and economic evaluations. The procurement challenges were further compounded by COVID-19 outbreak. Although the main equipment was delivered to the Dongola site, installation was still in progress at the time of the TE hence the wind turbine would be operational only after the project operational closure.

Based on the above, the achievement of Outcome 1 is rated **Moderately Unsatisfactory (MU).**

Table 14: Deliverables for Outcome 2

Result	Indicator	EOP Targets	Status at TE	Rating
Outcome 2: Policy, institutional and regulatory framework adopted	2.1 Number of environmental and social guidelines developed for implementing wind farms	Two guidelines for wind farm-specific EIA considerations (e.g. migrating birds, noise) and other hazards (e.g. civil and military aviation) developed	Report on ESIA for Red Sea wind sites	S
	2.2 Development of Standards Operating Procedures (SOPs) and technical specifications for establishment of wind farms	SOPs for wind power plant is developed	Technical specifications developed for the pilot project but no SOPs developed due to delays in implementation of the baseline project	MS
	2.3 Development of a feed-in tariff (FiT) policy NAMA for wind power in Sudan	Feed-in tariff policy NAMA for wind power in Sudan developed	Report on FiT and presentation workshop FiT NAMA policy developed	S
	2.4 Extent to which RE policies and regulations are adopted and enforced	Policies and legislation for renewable energy are effectively adopted and enforced	Policy and legislation in the approval process but not promulgated yet	MS

Output 2.1: 2.1 Formulated long-term energy policy and regulations for Sudan, including analysis of the cost-effectiveness of financial policy instruments (portfolio standards, feed-in-tariffs, carbon finance, carbon taxation, removal of fossil fuel subsidies, reforms of existing tariffs, accelerated depreciation of turbines, tax credits, capital subsidies, time-of-use tariffs, etc.) for reducing GHG emissions and increasing the energy independence of Sudan

The WEP appointed the University of Khartoum as national consultant for development of a study on the Environmental and Social Impact Assessment (ESIA) for wind sites along the Red Sea. The study report was completed in October 2016 and later submitted for approval the Sudanese Higher Council for Environment and Natural Resources (HCNR). A specific study was conducted on possible impact of onshore wind farms on migratory soaring birds (MSB) along the Red Sea Coast.

Output 2.2: Developed and endorsed standardised Power Purchase Agreement (PPA) for grid-connected renewable energy projects

The project appointed a team composed of a one international and one national consultant for development of a standardized Power Purchase Agreement (PPA) for grid-connected renewable energy projects. The objective of this assignment was to develop a model PPA and support it with delivery of an associated PPA training.

Developing a framework for power purchase agreements (PPAs) will ensure effective contracts are created for renewable energy generators seeking long term and secure investments. An associated training on the use of the PPA will assist in the construction of suitable contract options under the Feed-in Tariff scheme that the country is exploring, for both large and small renewable energy generators.

The consultants prepared and submitted their final report on the most applicable PPA.

Output 2.3: Established and approved dynamic, geographically-zoned feed-in tariff for wind energy in Sudan

The WEP contracted an international consultant to assist with the development of a feed-in tariff (FiT) scheme with the aim to help the GoS and specifically the ERA to define the most suitable legal and regulatory framework for a future incentive scheme on renewable energies. This assignment was conducted in the framework of the ERA assessment on the cost of electricity and the tariff structure for Sudan's power system including the feed-in tariffs. Reportedly, ERA had been unable to complete a tariff study initiated in 2015 due to a shortage of technical capacity and financial resources. (WB report).

A presentation and validation workshop RE feed-in-tariffs as a Nationally Appropriate Mitigation Action (NAMA) was conducted in February 2019 for 34 participants. The workshop main objective was presentation and validation of the report on FiTs produced by the WEP international consultant and discussion on the proposed development of a set of guidelines to establish energy NAMA eligibility and design criteria and update of the Sudan grid emission factor.

Output 2.4: Adopted and approved secondary legislation relevant to wind energy developed for catalysing private sector investment in wind energy projects, including a Public-Private Partnership Act and an Independent Power Producers Act

Output 2.5: Formulated and adopted grid code for the interconnection of variable renewable energy sources

The WEP prepared ToR for an international consultant to assist in the formulation and adoption of grid code for the interconnection of variable renewable energy sources. This contract was signed.

Output 2.6: Established and operational inter-ministerial High Committee for Renewable Energy for providing cross sectoral perspectives and high-level political support for clean energy

The WEP appointed two national consultants to develop a study on the establishment, structure and coordination mechanism of Sudan’s envisaged inter-ministerial “National High Committee for Renewable Energy (NHCRE)”. The study was presented in a consultation workshop in December 2018. The NHCRE is intended to be established with a mandate and operational guidelines to initiate, strengthen and harmonize RE policies, and streamline the decision-making process therein.

Output 2.7: Established an operational “one-stop shop” (OSS) for wind energy investors and developers housed jointly between the Investment and Regulatory Departments of the Ministry of Water Resources and Electricity

For implementation of the above outputs the WEP announced an international tender and received bids from six international and local consultancy firms. Following technical and financial evaluation the submitted offers, the contract was awarded to a consultancy consortium of the Regional Centre for Renewable Energy and Energy Efficiency (RCREEE), and the NEWTECH consulting group. The tasks for this consultancy were as follows:

- Formulation of Sudan long-term renewable energy policy and regulations;
- Development of secondary legislation relevant to wind energy for catalyzing private sector investment; and
- Establishment of "one-stop shop" (OSS) for RE investors and developers.

The first task comprised an update of the "Comprehensive Plan for Generating Electricity in Sudan using Renewable Energy" that had been developed in 2012 by Lahmeyer International. The output of this task is the Updated RE Master Plan for Sudan.

The focus of the second task was assistance with the development and implementation of the Independent Power Producers (IPP) Act. The objective of the IPP Act is to foster increased access to electricity in Sudan through IPP projects and to attract foreign as well as local investors to develop IPP projects by building confidence in the overall IPP system in Sudan.

The third task envisaged establishment of a dedicated one-stop-shop as a service facility for development of wind energy projects in Sudan.

The deliverables of the consultancy were presented at the workshop conducted in September 2019 with participation of representatives from different entities related to RE such as: WEP stakeholders, ministries in charge of investment and finance, the Central Bank of Sudan and representatives of the private sector.

The three studies were submitted to the Ministry of Energy & Mining –Power Sector (the successor of MWRE) for endorsement.

The WEP supported 4 participants to take part in a training program in Power Purchase Agreement (PPA) in Johannesburg, South Africa on 24-25 August 2015, and later organized a workshop on the same topic in Khartoum for 19 participants on 15-17 May 2016.

Overall Assessment of Outcome 2: The project supported development of several policy instruments and regulatory tools that will have a long-term impact on development of renewable energy in Sudan, including RE policy as well as secondary legislation. Particularly important in this regard is the development of feed-in-tariffs (both on and off-grid) for RE that will ensure financial viability of RE projects and therefore access to finance for future RE investment projects. The FiT NAMA policy supports the RE development in Sudan with a test case of the Red Sea Wind Power project that includes development of GHG baseline, and MRV system, identifies roles for stakeholders and sets institutional structure for NAMA governance.

Moreover, the establishment of the "one-stop-shop" within the MWRE/MEM is also an important assistance to wind energy investors and developers. A Directorate of Investment was formed within the structure of the Electricity holding Company – Ministry of Energy and Petroleum. All these are considered as important steps opening the RE market including wind energy installations to private sector investors.

However, several important policy and regulatory instruments including the FiT policy, power purchase agreement approach and NAMA reports are still waiting for approval by the GoS. Also, several activities and knowledge products for the demo wind farm were not developed due to lack of progress in the baseline/demonstration wind project. couldn't be made, including the preparation of SOPs for wind power plants.

In May 2021 the Directorate of Investment launched an Expression of Interest (EOI) seeking private sector developers of utility scale wind and solar PV plants. This is the first call for the private sector on investment in power generation through Public Private Partnership (PPP) modality that will end the monopoly of the government in the power sector in Sudan.

Based on the above, the achievement of Outcome 2 is rated **Moderately Satisfactory (MS).**

Table 15: Deliverables for Outcome 3

Result	Indicator	EOP Targets	Status at TE	Rating
Outcome 3: The wind technology support and delivery system strengthened	3.1 Number of individuals and organisations trained and capable of supporting activity in the Sudanese wind market.	100 engineers trained in wind technology (50 males & 50 females). 5 institutions supported in wind technology	About 100 individuals trained in various aspects of the wind technology 3 institutions received equipment for wind monitoring	S
	3.2 Development of a reliable national wind atlas	Wind atlas developed	Publicly accessible wind atlas integrated in the SETCO GIS system	S

Output 3.1: Developed and approved wind atlas for Sudan in a GIS system, with additional layers for geology, geomorphology, land ownership and type (e.g. protected areas / forests), settlements and routes of migratory birds

An international tender was announced in early 2018 for development of a wind atlas for Sudan. Technically acceptable bids were submitted by 5 companies. Following evaluation of financial proposals, the WEP awarded a contract to EMD International A/S (Denmark) in August 2018.

EMD developed the wind atlas in the format of a wind resource map using mesoscale and microscale modelling. While a country wide map uses spatial resolution of 2000 m, the four regions relevant for the wind projects are depicted with a spatial resolution of 100 m. The map was created with the weather and research forecast (WRF) model of the European Centre for Medium-Range Weather Forecasts (ECMWF) and the 5th generation of ECMWF reanalysis (ERA5) data from the 10-year period of 2008-2017. The multiple data sets in the wind atlas enable wind power modelling at different heights (20-150m).

EMD presented the Sudan wind atlas in a two-day workshop held in November 2018 for 60 participants from MWRE general directorates and its affiliated electricity companies, the Sudan Meteorological Authority, universities and research centres, as well as the private sector. The presentation workshop was followed by a two-day training workshop for fifty wind energy specialists from different institutions. The training covered the application of the new wind atlas mechanisms for its update.

This target intends to enhance stakeholders' technical and planning know-how and technological capacities for wind power developer.

In March 2017, the WEP signed a cooperation agreement with the Sudanese Electricity Transmission Company (SETCO) to host the Wind Energy Atlas in the SETCO GIS system

with the aim to develop additional information for wind atlas for Sudan in a GIS system, including additional layers for geology, geomorphology, land ownership and type (e.g. protected areas / forests), settlements, and routes of migratory birds.

At a workshop was held in December 2019, SETCO confirmed integration of the wind atlas into the SETCO GIS system that enables utilizing GIS applications for identification of the best locations for proposed wind projects. Furthermore, the workshop comprised discussion of the status of alternative renewable energy sources in Sudan and presentation of the Renewable Energy Master Plan.

Output 3.2: Local experts, technicians and practitioners capacitated to prepare and conduct site study visits during construction, interconnection, operation, and maintenance of the initial wind farm

The WEP supported procurement of 3 automatic weather stations for the national institutions of higher education (the National Energy Research Centre at Soba, the Energy Centre of the University of Khartoum, and the RE Centre of the Omdurman Ahlia University) as well as related training for 9 technicians from the beneficiary institutions on installation and operation of the weather stations.

In addition to the various capacity building events already mentioned under the previous outputs, the WEP representative participated in the training on formulation of proposals for low carbon climate resilient development and designing Green Climate Fund (GCF) projects in Enschede, Netherlands. Also, the WEP sponsored participation of 3 engineers from the GIS Department of SETCO in training on designing maps and visualisation with ArcGIS in Beirut, Lebanon.

The WEP also organized a workshop on use of the WAsP software for wind resource assessment, siting and energy yield calculation for wind turbines and wind farms for 11 participants.

One WEP engineer attended a training course on Ammonit equipment in Germany in order to learn about calculation of energy yield forecasts, monitoring wind power plants and analysing power curves of wind turbines.

Output 3.3: Approved RE-related curricula of specialised universities and the National Energy Research Centre (NERC)

The WEP contracted with University of Khartoum Consulting Corporation (UKCC) to review the current renewable energy curriculum and programmes in the Sudanese universities and higher education institutions. The report from this assignment was presented in a workshop held in December 2017 and summarized information about the existing renewable energy curricula and programmes in Sudanese universities and made suggestions to further enhance the capacity of higher education institutions in the fields of renewable energy through the development of a special educational curriculum for bridging the gap between education, research and business activities-

The WEP also assisted graduate and postgraduate students pursuing their graduation project and master studies on wind energy analysis from Sudan Universities.

Overall assessment of Outcome 3: Component 3 of the GEF project was formulated as indirect support to the baseline project and wind energy through technical assistance and capacity building. Specifically, the WEP project supported strengthening of technical capacities necessary for wind energy development and establishment of required infrastructure. Particular achievement under this part of the WEP is development of the wind atlas of Sudan that was integrated in the SETCO GIS system that will be important for identification of suitable localities for future wind energy projects. Moreover, 3 leading national research and academia institutions were equipped with wind measurement and monitoring systems.

On the capacity building side, the project supported training of about 100 technicians and engineers from different organizations through targeted trainings and participating in the project implementation.

Based on the above findings, the overall achievement of Outcome 3 is rated **Satisfactory (S).**

Table 16: Deliverables for Outcome 4

Result	Indicator	EOP Targets	Status at TE	Rating
Outcome 4: Adaptive learning and replication plan supported	4.1 Quality Management System for Dongola wind farm is established	Establishment of a quality management certification process (e.g. ISO 9001) for Dongola wind farm	Not developed as the baseline project was delayed	N/A
	4.2 Number of educational tours conducted to wind farms in neighbouring countries	Ten study tours undertaken to wind plants in the neighbouring countries (including 50% female and 50% male)	Study visit to Morocco Study tour to Al-Zafarana wind farm in Egypt	MS

Output 4.1: Documented lessons-learned, experiences and best practices related to the development of the Dongola wind farm compiled and disseminated for other wind farm projects in Sudan

Information about the progress in the WEP is communicated through its website at www.wepsd.org which was regularly updated. A documentary film was produced that features the workshop on formulation of Sudan long-term renewable energy policy and regulations, development of secondary legislation relevant to wind energy, and establishment of "one-stop shop for wind project developers and investors.

Output 4.2: Completed regional workshops for transferring knowledge and capacity to Sudan from relevant regional countries (e.g. Egypt, Morocco, Kenya)

A study visit to Morocco was organized for 5 members of the National Assembly Committee of Energy, Water, Mining, and Industry and the WEP Project Manager. The objective of the visit in October 2016 was to learn from Morocco's experience in the field of RE and get a high-level cross-sectoral political support needed for endorsement of RE policies (e.g. the Renewable Energy Law) and regulations for market-based approach to power generation from RE sources.

In December 2017, a study tour to Egypt was arranged in cooperation with the RCREEE for representatives of the National Load Dispatch Centre, ERA, the Renewable Energy Directorate

of MWRE and the WEP. The objective of the tour was to learn from the Egyptian Renewable Energy Sector experience in the field of RE policy and regulations beside the operation and maintenance of power plants. The participants also visited the Al-Zafarana wind farm in Egypt and got acquainted with management and operation of the wind farm.

Further planned visits to the East African Power Pool (EAPP) countries could not be organized due to COVID-19 restrictions and insufficient available budget.

Overall assessment of Outcome 4: This part of the project was designed to support adaptive learning and replication mainly through lessons-learnt from the Dongola baseline/demo project, regional knowledge transfer and study tours. Given the slow progress of the demonstration wind project, the certification for quality management of the wind farm could not be implemented. Some experiences and practices related to the development of the Dongola wind farm were collected and disseminated through the website and the documentary film and photos.

The project supported knowledge exchange through study visits to neighbouring countries (Morocco and Egypt) but the planned number of study visits was not achieved due to COVID-19 travel restrictions.

Based on the above findings, implementation of Outcome 4 is rated **Moderately Satisfactory (MS).**

Effectiveness

The extent to which the project contributed to the achieving or not achieving its intended outcomes and outputs is discussed in the previous section on 'Progress towards objective and expected outcomes'.

Given the above discussion of the relevance, the WEP contributed to national development priorities of Sudan, the UNDP CPD for Sudan, the UNDP Strategic Plan, UN SDGs, as well as to the GEF-5 strategic priorities.

The TE concludes that the project's greatest achievement was under Components 2 and 3 due to the strong commitment and ownership of the WEP by the key agencies of the GoS. Lesser implementation effectiveness under Component 1 was a result of the overambitious design of the WEP and its overreliance on the baseline investment project that was not realized. An alternative strategy of facilitation of one demonstration wind farm with financial contribution from the WEP under Component 1, combined with the current contents of Components 2 and 3 (i.e. enhanced policy and regulatory frameworks, capacity-building of key stakeholders, the development of financing mechanisms for RE investments, etc.) would have been more effective in achieving the project's objectives and would then have been more likely to pave way for larger investments into wind energy in Sudan.

The overall TE rating for effectiveness is **Moderately Satisfactory (MS).**

Efficiency

The main issues examined in relation to efficiency were the length of the project implementation period and to what extent the results have been achieved with the least costly GEF and other resources possible.

The WEP was approved for implementation by GEF CEO on 8 August 2014 for a period of 60 months. The signature of the Project Document by the Government of Sudan on 4 December 2014 officially marked the start of the project implementation. The original closure day of the project was January 2020. Further to the MTR recommendation, the project was granted 1-year extension. Due to the impact of the COVID-19 pandemic in the project final years, an automatic additional 6-month extension was granted. However, the project was not able to commence the Terminal Evaluation in time for the project operational closure in July/August 2021, the closure was further delayed by three months but even this was not sufficient and had to be further prolonged.

Overall, the resource allocation to the individual WEP components was found reasonable and balanced. The evaluators did not find any serious inefficiencies in the use of the allocated funds and therefore consider the use of the project funds cost-effective.

The analysis of project expenditures under 'Finance and co-finance' showed that the project has used almost 100% of the GEF grant but has not delivered all planned results by the time of the TE. The 18-month extension of the project was justified by the slow start of the project and the COVID-19 impact. Notwithstanding the extension, some of the planned results were not achieved by the time of the TE, particularly under Components 1 and 4.

As to the allocation and use of resources, the project Despite the prolonged timeframe of the project, the overall management cost was less than budgeted. This was due to the national implementation by MWRE that included in-kind co-financing by the GoS partners towards the project management cost. In several cases, the project engaged national consultants that also helped to keep the cost of the substantive project components low and under control.

Based on the above findings, the efficiency in terms of the project timeline and use of resources is rated **Moderately Satisfactory (MS).**

Overall project outcome

The results framework in the Project Document does not contain any indicators and targets for assessment of the status of achievement of the Project Objective.

Table 17: Status of achievement of the Project Objective

Project Objective	Indicator	EOP Targets	Status at TE	Rating
To overcome barriers to the market development of utility-scale wind farms in Sudan	Introduction of renewable energy policies and regulations	Put in place Sudan renewable energy policy, law and regulation	RE policy in place FiT for RE developed Standard PPA developed	
	Capacity of wind power installed	Installing 100 MW capacity in Dongla	Installation of demo 1 MW wind turbine in progress	
	MWh of power generated by grid-connected wind energy	Generating of 300,917 MWh/year from wind energy	No power generated by wind turbine	

The WEP was designed to provide support for establishment and implementation of the baseline investment project of the 100 MW wind farm at Dongola[19]. The latter project had been planned based on agreed bilateral cooperation between the GoS and China[20]. Both parties agreed that financial guarantee for the project cost of US$ 213 million would be provided by a Chinese bank. The project was planned for gradual commissioning in phases starting from 2014 until 2018. However, the secession of South Sudan and related loss of oil revenue for the GoS made the above financing model unrealistic. The changed political situation, negative impact of the US economic sanctions that had been in place since 1997, and unresolved arears of Sudan with the International Development Association was the reason that despite its commitment to the Dongola project, the GoS was not able to find required funding even for the initial phase of 5 MW capacity installation.

The GoS examined several sources of foreign direct investment for full or partial funding of the Dongola wind farm – initially the joint project facility of International Renewable Energy Agency (IRENA) and the Abu Dhabi Fund for Development (ADFD), the Islamic Bank for Development, and later innovative financing models such as EPC and IPP[21].

As none of the efforts to get external financing was successful, the MWRE/MEM established a special committee with participation of the WEP PMU to follow-up and accelerate implementation of the Dongola baseline project. In September 2017, MWRE took a decision to downscale the baseline project and implement 1 MW wind turbine installation as a pilot phase using (MWRE) MoE's own resources.

Direct CO_2 emission reductions from operation of the originally planned 100 MW Dongola project were estimated at 91,780 tCO_2/year so the expected emission reductions from the 1 MW pilot phase would be significantly lower. Due to slow progress in construction of the wind turbine, even the reduced CO_2 emission reductions have not been realized over the lifetime of the WEP.

[19] At the PPG stage, the baseline project included two Red Sea wind farms at Tokar and Port Sudan, and smaller wind farms at Nyala and Khartoum. Following guidance of the GEF Secretariat during the Project Document preparation, only the Dongola wind park was included.

[20] MoU for Clarification and Contract Negotiation, 100 MW Dongola Wind Farm Project, signed between the Ministry of Energy and Dams of Sudan and the China International Water & Electric Corporation on 25 January 2012

[21] "EPC" (Engineering, Procurement, and Construction) refers to businesses based on a construction work contract, where a contractor offers engineering (power plant design), procurement, and construction services to its client. It is also referred to as "full turnkey contract" because the facility is delivered ready for the client to start operation by simply turning the key. "IPP" (Independent Power Producer) is a business model where a contractor becomes the owner of the power plant and produces power, which is sold, for instance, to local power utilities.

As discussed under the 'Project design' section, the design of the WEP project was too ambitious and too much dependent on the baseline investment project that has been beyond the control of the WEP implementation team. Hence the failure to realize at least a fraction of the planned CO_2 emission reductions can't be attributed to the WEP implementation. The part of the Project Objective related to promotion of the use of wind energy in Sudan was to some extent achieved through successful implementation of Outcomes 2, 3 and 4 as discussed under Effectiveness'.

Based on the above, the overall achievement of the Project Objective is rated **Moderately Unsatisfactory (MS).**

Overall project outcome

The calculation of the overall project outcome rating is based on the ratings for relevance, effectiveness and efficiency, of which relevance and effectiveness are critical. The ratings are summarized in Table 18 below.

Table 18: TE ratings for the overall project outcome

Assessment of outcomes	**TE rating**
Relevance	Relevant (R)
Effectiveness	Moderately Satisfactory (MS)
Efficiency	Moderately Satisfactory (MS)
Overall project outcome rating	Moderately Unsatisfactory (MU)

Country ownership

In order to examine the country ownership, GEF evaluations are required to find evidence that the project fits within stated sector development priorities, and also that outputs, such as new environmental laws, have been developed with involvement from the governmental officials and have been adopted into national strategies, policies and legal codes.

The project was designed upon extensive consultations with an array of public stakeholders, including extensive inputs from the key agencies of the Government. A high level of country ownership of the project was one of the key assumptions made during the project design phase. The extensive stakeholder consultations at the project preparatory phase resulted in high ownership by the various WEP stakeholders.

Strong ownership of the project by various governmental and private sector entities was sustained throughout the project implementation and proved to be one of the critical drivers of progress towards the planned results under the institutional framework development and capacity building components (Outcomes 2 and 3) of the WEP. The ownership was demonstrated by active participation and engagement of relevant public institutions and private entities in the WEP implementation and by a strong role of the Project Board in providing strategic guidance and operational oversight to the project. It can be therefore concluded that the strong project ownership by national stakeholders resulted not only from the significant relevance of the WEP to national priorities, but also from the proactive participation of the stakeholders in the project implementation.

Gender equality and women's empowerment

The focus of this section is to discuss to what extent was the project mainstreaming UNDP priorities such as poverty alleviation, improved governance, and women's empowerment**,** i.e. whether it is possible to identify and define positive or negative effects of the project on local populations**,** whether gender issues had been taken into account in project design and implementation and in what way has the project contributed to greater consideration of gender aspects.

The WEP was prepared shortly after the issuance of the GEF Policy on Gender Mainstreaming[22] that expresses GEF's commitment to enhancing the degree to which the GEF and its implementing agencies promote the goal of gender equality through GEF-funded projects. The project was assigned a gender marker 1 which means a limited contribution to gender equality and women's empowerment[23].

There were no specific gender-related results defined at output or outcome level in the PRF contributing to gender equality and women's empowerment and development of a gender action plan was not envisaged in the Project Document. Although there was no specific gender strategy planned, the project did make basic efforts to include gender perspectives. During project implementation, attention was given to inclusion of women in various capacity building and awareness raising activities on wind energy.

The evaluators conclude that this project does not belong to the class of projects where gender equality would be one of the main concerns. Both males and females were involved to the extent possible in the project activities, particularly in the capacity building and meetings of the project governance and planning bodies. Nevertheless, there is a room for improvement towards a stronger monitoring and reporting framework for the gender dimension for future projects.

Cross-cutting issues

At the time of the WEP preparation, the cross-cutting issues were not central to the formulation of GEF projects. Therefore, the cross-cutting issues were not incorporated into the design and implementation of the project.

The WEP design comprises only indirectly some cross-cutting dimensions in terms of producing local environmental benefits in terms of reduced local air pollution and related health benefits, as well as improvement of living standards, job creation, economic diversification, and provision of access to energy to rural households.

Nevertheless, and the impact on human rights, poverty and marginal communities could have received greater attention during the design and implementation of the project.

[22] Policy on Gender Mainstreaming, Global Environmental Facility, May 2012
[23] Coding Definitions for Gender Equality Markers: Guidance Note, UN CEB, 2018

Social and environmental standards

There were no environmental and social risks identified through the SESP in line with UNDP Social and Environmental Standards. Consequently, no management plans to mitigate social and environmental risks were developed during the project implementation.

GEF additionality

The traditional concept of additionality in the GEF projects as based on the incremental cost approach to ensure that GEF funds do not substitute for existing development finance but provide additional resources to produce global environmental benefits. This concept presents the additionality as a narrow focus on specific environmental benefits from the GEF funding but does not recognize other objectives that support the achievement of the global environmental benefits over a longer term.

The special environmental benefits from this project are examined under the assessment of the Project Objective and the environmental sustainability. In line with recent developments of evaluation methodology of GEF projects, the GEF additionality is examined in terms of changes in the attainment of direct project outcomes at project completion that can be attributed to GEF's interventions[24].

The project provided a legal/regulatory additionality through its support for development of legal and regulatory frameworks. The reform of the legal and regulatory framework for renewable energy was in progress at the WEP inception but the project accelerated revision and amendment of relevant policies and laws related to wind energy. However, their adoption into practice is beyond control of the project as it is subject to standard legislative approval process that is prolonged due to unstable political situation in the country.

Institutional additionality was provided through capacity building of various WEP stakeholders and technical assistance to the relevant entities of the GoS and the private sector. As discussed under Outcome 3, relevant GoS and academia institutions have been strengthened to provide support for collection of information and data for development of wind energy projects and assistance was also extended through establishment of a one-stop shop for private investors.

Through modification of Outcome 1, the GEF project provided finance for demonstration of a grid-connected wind turbine at a pilot scale. This is considered as financial as well as innovation additionality of the project. Together with the improved legislative/ regulatory frameworks and strengthened institutions, the financial support for the demonstration of the wind technology could become a basis and incentive for leveraging future private financing for large scale generation of wind energy in the country.

As the baseline project at Dongola was not realized, the project did not provide any socio-economic additionality in terms of living standard improvements among affected population groups.

[24] An Evaluative Approach to Assessing GEF's Additionality, GEF/ME/C.55/inf. 01

Catalytic/Replication effect

The replication plan of the WEP is based on compilation and distribution of experience from implementation of the Dongola baseline project. As the latter was downscaled and was not completed within the operational life of the WEP, there is no effect of replication for other wind farms in Sudan.

The WEP has generated some lessons relevant for replication and scaling up of the project to other parts of the country and to other countries. These lessons are summarized in the 'Lessons learned' in the next chapter.

There is an indirect catalytic effect of the WEP in terms of enhanced capacities of various national stakeholders for preparation and implementation of wind energy projects in the future. Materialisation of this catalytic effect will depend on availability of financial resources for future wind energy projects.

Progress to impact

It is often too early to assess the long-term impacts of a project at the point of its completion as many results, particularly environmental benefits, can take several years to manifest. Nonetheless, reviewing progress to impacts at project completion helps determine the extent to which long-term results are likely.

There is no direct impact of the WEP on establishment of wind energy production facilities in Sudan due to the downscaling of the Dongola baseline project and delays in its implementation. The immediate impact of the WEP is the advancement of environmental and social impact assessment for wind farms and availability of studies and tools for future projects. The EIA that had been in place at the WEP inception was updated through the ESIA study for wind sites along the Red Sea in line with the international best practices. Other studies and tools developed by the WEP (e.g. the wind atlas and its hosting in the SETCO GIS system, the studies for the secondary legislation, and the one-stop shop for wind project developers) are available to all planned wind energy projects.

Sustainability

Sustainability of the project is judged by the commitment of the beneficiary country to continue and replicate the project activities beyond the project completion date. The evaluation identifies key risks to sustainability and explains how these risks may affect continuation of the project benefits after the project closes. The assessment covers institutional/governance risks, financial, socio-political, and environmental risks.

Financial sustainability: The financial sustainability is judged by the commitment of the project stakeholders for continued support for sustaining the already realized project benefits and their replication to new additional locations.

The Government of Sudan and other project stakeholders demonstrated a strong commitment towards implementation of the WEP. However, The Sudanese electricity sector has not yet created a sufficiently enabling environment for private sector investments. During the lifespan of the WEP, Sudan's arrears to the International Development Association (IDA) caused lack of credit guaranties for private investors. Although the recent clearance of the arrears has paved

way for Sudan's re-engagement with IDA after nearly three decades, it remains to be seen how quickly and effectively the IDA grants will be available for support of investments into renewable energy projects.

Domestic inflation and restricted access to foreign currency are other important factors that cause significant risks to private investors. IPPs need unrestricted access to foreign currency for financing and operations, including procurement of spare parts and maintenance services, that must be procured quickly to avoid lengthy shutdowns of RE plants.

Based on the above, financial sustainability is rated **Moderately Likely (ML).**

Socio-economic sustainability: Renewable energy deployment has the potential to increase national income, save financial resources for costly fuel imports, and strengthen national energy security through reduced dependency on imported fuels. Moreover, RE projects contribute to industrial development and job creation. Opportunities for positive socio-economic impact exist in each stage of the wind energy projects, including project planning, equipment manufacturing and installation, connection to grid, operation and maintenance, as well as decommissioning.

In the planning segment, the added value is created by engaging national experts and companies to conduct resource assessments, feasibility studies, and legal reviews. In manufacturing, the added value is created in the sourcing of raw material, manufacturing sub-components, assembling and spare parts. The value created in the installation phase arises mostly from labour-intensive activities in civil engineering infrastructure works and assembling of wind or solar plants. The grid connection stage involves grid operators responsible for integrating renewable generation as well as local companies to undertake any related infrastructure development. Operation and maintenance offer long-term opportunities for involvement of local industries, while decommissioning of RE plants at the end of their lifespan comprise recycling industries, demolition activities, and eventual refurbishing of parts of equipment for sale to new markets.

Further positive socio-economic effects originate in the processes complementing the life cycle of wind energy projects, such as financial services, education, research and development and consulting.

Based on the above socio-economic sustainability is rated **Likely (L).**

Institutional framework and governance: The GoS established relevant national policies as well as legal and regulatory frameworks for development of renewable energy in general and wind energy in particular. The WEP supported development of several additional instruments for amendment and enhancement of the existing legal framework supportive to investments in wind energy.

Development of wind energy maintains a prominent position in the recently updated Nationally Determined Contribution (NDC) under the Paris Agreement[25]. Implementation of the NDC

[25] The Nationally Determined Contribution (NDC) for Sudan was submitted to the UNFCCC on 1 August 2017 and an interim NDC update was submitted on 31 May 2021.

will provide opportunities for further improvement of the existing legal and institutional frameworks and will thus enhance sustainability of the WEP results.

Before the preparation of the WEP and during its implementation, the political situation in Sudan has been turbulent and fragile. Since 2011, the country is facing a new situation after declaration of independence and secession of South Sudan. After several turbulent years, the country has been on the route of political transition. A transitional government was installed in 2020. However, the COVID-19 pandemic has exacerbated the already complex political situation. As it is likely that the relatively fragile political situation and serious political challenges will continue in the short and medium term, the institutional momentum needed for sustainability of the project results might gradually vanish if people capacitated in the project decide to pursue their goals in other areas and/or countries.

Based on the above, the institutional framework and governance sustainability is rated **Moderately Likely (ML).**

Environmental sustainability: Global environmental benefits of wind energy projects are obvious as they reduce GHG emissions from the conventional (fossil) energy sources that they replace. These global benefits are supplemented by several local environmental benefits.

Nitrogen and sulphur oxides generated by electricity production from fossil fuel react in the atmosphere to form ground-level pollutants such as ozone, nitric acid, sulfuric acid and ammonium nitrates and sulphates that negative effects on human health and cause visibility degradation, acid deposition, and eutrophication. In addition, the conventional power plants are also sources of direct emissions of mercury. Wind electricity production has much lower life cycle emissions of conventional air pollutants than conventional coal and natural gas power plants and the majority of air pollutants' emissions occur during the manufacturing stage of wind technology components.

Electricity production from thermoelectric technologies is dependent on use of considerable amounts of water, primarily for cooling. The water use by conventional power plants is characterized by water withdrawals (the total amount of water taken from a source) and water consumption (the amount of water not returned to the source). Use of the wind technology for power production in Sudan is particularly important with regard to water withdrawals as it reduces competition for scarce water resources and reduces thermal pollution from water returns and prevents discharges of chemical pollutants, such as the biocides used in cooling towers of conventional power plants.

Based on the above, the environmental sustainability is rated **Likely (L).**

According to the UNDP/GEF guidelines, all risk dimensions of sustainability are critical and the overall rating for sustainability cannot be higher than its lowest rated dimension. Therefore, Table 19 below summarizes the ratings for individual sustainability aspects and justifies the overall rating of sustainability as **Moderately Likely (ML).**

Table 19: Summary assessment of sustainability

Sustainability aspect	TE rating
Financial resources	Moderately Likely (ML)
Socio-political	Likely (L)
Institutional framework and governance	Moderately Likely (ML)
Environmental	Likely (L)
Overall Likelihood of Sustainability	Moderately Likely (ML)

The summary of ratings of the mandatory evaluation criteria is in the Table 20 below.

Table 20: Overall Project Rating

1.Monitoring & Evaluation (M&E)	**TE Rating**
M&E plan: design at entry	Satisfactory (S)
M&E plan: implementation	Moderately Satisfactory (MS)
Overall quality of M&E	Moderately Satisfactory (MS)
2.Implementing Agency Implementation & Executing Agency Execution	**TE Rating**
Quality of UNDP Implementation/Oversight	Satisfactory (S)
Quality of Implementing Partner Execution	Satisfactory (S)
Overall quality implementation / execution	Satisfactory (S)
3.Assessment of Outcomes	**TE Rating**
Relevance	Relevant (R)
Effectiveness	Moderately Satisfactory (MS)
Efficiency	Moderately Satisfactory (MS)
Overall Project Outcome	Moderately Unsatisfactory (MU)
4.Sustainability	**TE Rating**
Financial	Moderately Likely (ML)
Socio-political	Likely (L)
Institutional framework and governance	Moderately Likely (ML)
Environmental	Likely (L)
Overall Likelihood of Sustainability	Moderately Likely (ML)

CONCLUSIONS AND RECOMMENDATIONS

This section contains conclusions as judgements based on the findings provided in the previous section. A short summary of relevant finding precedes each conclusion that is followed by a recommendation as a corrective action proposed to be taken by relevant project stakeholders to address the deficiencies identified in the findings and conclusions.

Main conclusions

The implementation of the project was affected by three factors, namely the overambitious WEP design, change of the political situation in the country, and delays in procurement of equipment.

At the WEP inception, Sudan had no policy and regulatory frameworks in place to support private investments in renewable energy. With reported total lead time for an onshore utility-scale wind power installation of minimum 2 years or more., the project plan to go from baseline 0 MW to the target 100 MW of private sector wind power generation was too ambitious and therefore unrealistic, even as the planned phased installation over the 5-year project period.

Secondly, the WEP was designed on expectation of financing for the baseline wind project at Dongola by a loan under a bilateral cooperation agreement. However, the secession of South Sudan that started in 2011 caused that the loan financing incorporated into the baseline investment wind project design was no more realistic and the plan for the bilateral cooperation investment in the wind energy in Sudan was abandoned.

Upon recommendation of the MTR, the budget of Component 1 was reprogrammed for financing of procurement and installation of a 1MW demonstration wind turbine. However, procurement of equipment was slow, and several procurement challenges were further compounded by the COVID-19 outbreak. Although the main equipment had been delivered to the Dongola site, installation was still in progress at the time of the TE and therefore the demonstration wind turbine was not erected by the WEP operational closure.

Under Component 2, the WEP supported development of several policy instruments and regulatory tools that will have a long-term impact on development of renewable energy in Sudan, including RE policy as well as secondary legislation. Particularly important in this regard is the development of feed-in-tariffs (both on and off-grid) for RE that will ensure financial viability of RE projects and therefore access to finance for future RE investment projects. The FiT NAMA policy supports the RE development in Sudan with a test case of the Red Sea Wind Power project that includes development of GHG baseline, and MRV system, identifies roles for stakeholders and sets institutional structure for NAMA governance.

Moreover, the establishment of the “one-stop-shop” in MWRE is also an important assistance to wind energy investors and developers. A Directorate of Investment was formed within the structure of the Electricity holding Company – Ministry of Energy and Petroleum. All these are considered as important steps for opening the RE market including wind energy installations to private sector investors.

However, several important policy and regulatory instruments including the FiT policy, power purchase agreement approach and NAMA reports are still waiting for approval by the GoS. Also, several activities and knowledge products for the demo wind farm were not developed due to lack of progress in the baseline/demonstration wind project, including preparation of SOPs for wind power plants.

Under Component 3, the WEP project provided valuable assistance to development of wind energy in Sudan through technical assistance and support for human and institutional capacity building. Specifically, the project supported strengthening of technical capacities necessary for wind energy development and establishment of required infrastructure. Particular achievement under this part of the WEP was development of the wind atlas of Sudan that was integrated in the SETCO GIS system that will be important for identification of suitable localities for future wind energy projects. Moreover, 3 leading national research and academia institutions were equipped with wind measurement and monitoring systems.

On the capacity building side, the project supported training of about 100 technicians and engineers from different organizations through targeted trainings and participating in the project implementation.

Component 4 of the WEP was designed to support adaptive learning and replication mainly through lessons-learnt from the Dongola baseline/demonstration project, regional knowledge transfer and study tours. Given the delays in the baseline/demonstration wind project, the certification for quality management of the wind farm could not be implemented. Therefore, only some experiences and practices related to the preparation of the Dongola wind farm were collected and disseminated through the project website and communicated through preparation of a documentary film and photos.

The project supported knowledge exchange through study visits to neighbouring countries (Morocco and Egypt) but the planned number of study visits was not achieved due to COVID-19 travel restrictions.

Specific conclusions and recommendations

This Terminal Evaluation makes two types of recommendations. Recommendations on substantive matters are provided for consideration of the national project partners in order to ensure the project results are consolidated and sustained by relevant project stakeholders. These recommendations are suggested for implementation as soon as possible using the existing institutional capacities and frameworks that have been created by the current project.

Recommendations to follow-up and/or reinforce initial benefits from the project

Conclusion 1: Due to inability of the GoS to secure financing of the original 100 MW baseline wind project, the WEP project stakeholders decided to support procurement and installation of a 1 MW demonstration wind turbine. The wind turbine was delivered to the Dongola project site but its installation and commissioning has been delayed due to various procurement and contracting issues. There is a need for continued supervision of the installation and commissioning of the wind turbine after the closure of the WEP.

Recommendation 1: The Ministry of Energy and should provide sufficient resources for the WEP PMU to continue supervision and coordination of the wind turbine installation and commissioning until the point of handover to the turbine operator.

Conclusion 2: Several important policy and regulatory instruments for private sector investments into RE projects drafted with the assistance of the WEP, including the FiT policy, the power purchase agreement approach and NAMA reports, were still waiting for endorsement and promulgation by the GoS. Officially approved and promulgated policy and legislative framework is of utmost importance for enabling participation of the private sector.

Recommendation 2: The Ministry of Energy and Mining should closely monitor the legislative approval process for the policy and regulatory instruments for renewable energy in order to ensure enabling policy and legislative framework is in place and effective for attracting private investments into wind energy.

Conclusion 3: During the WEP implementation, the project website (www.weps.org) has provided good overview on progress in development of the policy and legal frameworks and technical reports. It is desirable to ensure continuity of the website and establishment of a an electronic repository of reports and studies for further development of wind energy in Sudan.

Recommendation 3: The Ministry of Energy and Mining should ensure continued operation and maintenance of the WEP website and its linkages to the one-stop-shop for investors and developers of wind energy projects that was established under the WEP. One option could be handing over the project website to educational institutions or research centres.

Conclusion 4: After years of international isolation and embargoes limiting access to development financing, Sudan has cleared its arrears with the International Development Association (IDA), and opened thus access to multimillion development financing. Some projects are potentially viable from a commercial perspective but the initial development costs often prevent these projects from accessing necessary financing. It is desirable to promote reduced perception of risks and greater investor confidence in wind energy technologies and projects and contribute thus to improved bankability of wind energy projects.

Recommendation 4: The UNDP CO should mobilise resources for assistance to the GoS in discussions with international and local financial intermediaries with the aim of supporting establishment of private sector funding windows and credit lines for leveraging required financing for private sector investments in wind energy projects.

Conclusion 5: Performance data from operation of the demonstration wind turbine would be of great value for future development of wind energy projects.

Recommendation 5: The Ministry of Energy and Mining should ensure that performance data from operation of the demonstration turbine are systematically collected and cross-validated with the wind atlas developed under the WEP in order to inform planning of future wind energy projects.

Recommendations to improve the design and monitoring of future projects on wind energy

Conclusion 6: The WEP project design was led by the GEF strategy for maximizing GHG impacts and prioritisation of projects supporting utility-scale power production. However, the WEP was linked to a baseline investment project that was not operational and even did not have secured financing.

Recommendation 6: For design of future projects on wind energy, the UNDP CO should include baseline investment projects that already have secured financing and eventually have started implementation. Attention should be paid to phased and gradual increase of the wind energy production capacities.

Conclusion 7: Preparation and approval of GEF-financed full sized projects require relatively long time (typically 1-2 years) during which significant changes of political and economic situation in a project recipient country can occur. Adaptive management of such project should be applied particularly at the few existing opportunities for substantive review of the project planned results, such as the Inception Workshop and the Mid-Term Review.

Recommendation 7: For implementation of future projects on RE, UNDP CO and the national Implementing Partner should ensure timely organisation of the project Inception Workshop and ensure that it is used for rigorous assessment of the original assumptions and risks to the project and eventual substantive changes of the project results framework.

Conclusion 8: Setting of project indicators and targets at the level of the Project Objective should be realistic in terms of what a GEF project can actually achieve during the typical relatively short implementation period.

Recommendation 8: UNDP CO should ensure that the project designers undertake a careful assessment of the potential provision of global environmental benefits from RE projects already during the projects' implementation phase and, wherever possible, focus the project objective indicators and targets on immediate post-project time periods.

Conclusion 9: Due to the sustained commitment of the donor community to gender mainstreaming, there is an increasing need for inclusion of gender perspectives into future design and implementation of RE projects.

Recommendation 9: UNDP CO should ensure that design of future projects on RE include a more thorough analysis of potential impacts of the planned interventions on men and women and that monitoring of the projects capture and report information about the gender mainstreaming in a systematic manner.

Conclusion 10: At project inception, the project partners made commitments to co-financing of the project activities. Information about the actual co-financing provided was not readily available for the Terminal Evaluation.

Recommendation 10: UNDP CO should ensure that information on actual project co-financing is systematically tracked during the project implementation and is included in the last Project Implementation Report.

Lessons learned and good practices

Implementation of the WEP demonstrated the importance of a thorough revision of the assumptions made at the project inception and initial identification of risks and their systematic monitoring throughout the project. In particular, the impact of the risk of non-availability of financing for the baseline project was underestimated at the project inception.

Strong multi-stakeholder engagement in the project design and implementation ensures that the comparative advantages of different actors are taken into consideration. During implementation, clarification of roles and responsibilities ensures that complementarities are built while avoiding overlaps, competition and waste of resources;

Furthermore, the experience from the WEP shows negative effect of too ambitious baseline investment projects. As the baseline investment failed to materialise, the incremental support provided by GEF project did not result in the expected global environmental benefits.

The WEP implementation pointed out to the need for timely adaptive management decisions for revision of the project results framework as there are only few points in time when such substantive revision is allowed. In case that facing the reality of failed baseline project investment the decision for downscaling of the Component 1 was made early at the Inception Workshop, the project would have been able to deliver much more practical and tangible results including a contribution, albeit small, to global environmental benefits.

Annex 1: Evaluation Terms of Reference

https://procurement-notices.undp.org/view_notice.cfm?notice_id=76615

Annex 2: Evaluation Matrix

Evaluative Criteria Questions	Indicators	Sources	Methodology
Relevance: How does the project relate to the main objectives of the GEF focal area, and to the environment and development priorities at the local, regional and national levels?			
• Does the project relate to the GEF Climate Change focal area and has it been designed to deliver global environmental benefits in line with relevant international climate change objectives?	• The project includes the relevant GEF outcomes, outputs and indicators • The project makes explicit links with global climate action goals	• Project Document • GEF 5 Focal Area Strategy	• Desk Review of Documents
• Is the project aligned to national development objectives, broadly, and to national energy transition priorities specifically?	• The project design includes explicit links (indicators, outputs, outcomes) to the national development policy/national energy policies	• Project Document • National development strategy, energy policies, etc.	• Desk Review of Documents • Interviews of the project stakeholders
• Is the project's Theory of Change relevant to addressing the development challenge(s) identified?	• The Theory of Change clearly indicates how project interventions and projected results will contribute to the reduction of the three major barriers to low carbon development (Policy, institutional/ technical capacity and financial)	• Project Document • PIF	• Desk Review of Documents
• Does the project directly and adequately address the needs of beneficiaries at local and regional levels?	• The Theory of Change clearly identifies beneficiary groups and defines how their capabilities will be enhanced by the project	• Project Document • PIF	• Desk Review of Documents
• Is the project's results framework relevant to the development challenges have the planned results been achieved?	• The project indicators are SMART • Indicator baselines are clearly defined and populated and milestones and targets are • The results framework is comprehensive and demonstrates systematic links to the theory of change	• Project Document • PIF	• Desk Review of Documents • Interviews of the project stakeholders
• Have the relevant stakeholders been adequately identified and have their views, needs and rights been considered during design and implementation?	• The stakeholder mapping and associated engagement plan includes all relevant stakeholders and appropriate modalities for engagement.	• Project Document • Inception report	• Desk Review of Documents • Stakeholder Interviews

		• Planning and implementation have been participatory and inclusive	• Stakeholder mapping/engagement plan and reporting • Quarterly Reports • Annual Reports (PIR)	
	• Have the interventions of the project been adequately considered in the context of other development activities being undertaken in the same or related thematic area?	• A partnership framework has been developed that incorporates parallel initiatives, key partners and identifies complementarities	• Project Document • Quarterly Reports • Annual Reports (PIR) • Stakeholder mapping/engagement plan and reporting	• Desk Review of Documents • Stakeholder Interviews
	• Did the project design adequately identify, assess and design appropriate mitigation actions for the potential social and environmental risks posed by its interventions?	• The SES checklist was completed appropriately and all reasonable risks were identified with appropriate impact and probability ratings and risk mitigation measures specified	• Project Document • SES Annex	• Desk Review of Documents
Effectiveness: To what extent have the expected outcomes and objectives of the project been achieved?				
	• Has the project achieved its output and outcome level targets?	• The project has met or exceeded the output and outcome indicator end-of-project targets	• Quarterly Reports • Annual Reports (PIR) • Site visit/field reports	• Desk Review of Documents • Interviews with project staff, stakeholders and beneficiaries
	• Have lessons learned been captured and integrated into project planning and implementation?	• Lessons learned have been captured periodically and/or at project end	• Validation Workshop Minutes *(if available)* • Quarterly Reports • Annual Reports (PIR)	• Desk Review of Documents • Interviews with project staff, stakeholders and beneficiaries
	• Has the M&E plan been well-formulated, and has it served as an effective tool to support project implementation?	• The M&E plan has an adequate budget and was adequately funded • The logical framework was used during implementation as a management and M&E tool	• Project Document • M&E Plan • AWPs • FACE forms	• Desk Review of Documents • Interviews with project staff and government stakeholders

		• There was compliance with the financial and narrative reporting requirements (timeliness and quality) • Monitoring and reporting has been at both the activity and results levels	• Quarterly Narrative Reports • Site visit reports	
	• Were relevant counterparts from the Government and civil society involved in project implementation, including as part of the Project Board?	• The Project Board participation included representatives from key project stakeholders	• Project Board Minutes *(if available)*	• Interviews with project staff, stakeholders and beneficiaries
	• How effective were the partnership arrangements under the project and to what extend did they contribute to achievements of the project results?	• A partnership framework has been developed that ensured coordination of parallel initiatives, involvement of key partners and identification of complementarities	• Annual Reports (PIR) • Quarterly reports	• Desk Review of Documents • Interviews with project staff, stakeholders and other donors
	• How well were risks (including those identified in the Social and Environmental Screening (SES) Checklist), assumptions and impact drivers being managed?	• A clearly defined risk identification, categorization and mitigation strategy (updated risk log in ATLAS)	• UNDP ATLAS Risk Log • M&E Reports	• Desk Review of Documents • Interviews with project staff, stakeholders and beneficiaries
• Efficiency: Was the project implemented efficiently, in-line with international and national norms and standards?				
	• Did the project adjust dynamically to reflect changing national priorities/external evaluations during implementation to ensure it remained relevant?	• The project demonstrated adaptive management and changes were integrated into project planning and implementation through adjustments to annual work plans, budgets and activities • Changes to AWP/Budget were made based on mid-term or other external evaluation • Any changes to the project's planned activities were approved by the Project Board • Any substantive changes (outcome-level changes) approved by the Project Board and donor, as required	• Annual Work Plans • Validation Workshop Minutes • Quarterly Reports • Annual Reports (PIR) • Project Board meeting minutes *(if available)*	• Desk Review of Documents • Interviews with project staff, stakeholders and beneficiaries
	• Was the process of achieving results efficient? Did the actual or expected results (outputs and outcomes) justify	• The project achieved the planned results in an efficient manner	• Annual Workplans • Quarterly Reports	• Desk Review of Documents

	the costs incurred? Were the resources effectively utilized?	• Funds used for project implementation were utilized affectively and contributed to achievement of project results	• Project document	• Interviews with project staff, stakeholders, beneficiaries
	• What were the strengths and weaknesses of the implementation modality?	• The project implementation followed the division of responsibilities between the project implementing partners in an efficient manner	• Annual Reports (PIR) • Quarterly reports	• Desk Review of Documents • Interviews with project staff, stakeholders, beneficiaries
	• Was co-financing adequately estimated during project design (sources, type, value, relevance), tracked during implementation and what were the reasons for any differences between expected and realised co-financing?	• Co-financing was realized in keeping with original estimates • Co-financing was tracked continuously throughout the project lifecycle and deviations identified and alternative sources identified • Co-financiers were actively engaged throughout project implementation	• Annual Work Plans (AWPs) • Validation Workshop Minutes *(if available)* • Quarterly Reports, including financial reports • Annual Reports (PIR)	• Desk Review of Documents • Interviews with project staff, stakeholders, other donors and beneficiaries
	• Was the level of implementation support provided by UNDP adequate and in keeping with the implementation modality and any related agreements?	• Technical support to the Executing Agency and project team were timely and of acceptable quality. • Management inputs and processes, including budgeting and procurement, were adequate	• UNDP project support documents (emails, procurement/ recruitment documents) • Quarterly Reports • Annual Reports (PIR)	• Desk Review of Documents • Interviews with project staff, UNDP personnel
	• Were financial audit/spot check findings adequately addressed and relevant changes made to improve financial management?	• Appropriate management responses and associated actions were taken in response to audit/spot check findings. • Successive audits demonstrated improvements in financial management practices	• Project Audit Reports	• Desk Review of Documents
• Sustainability: To what extent are there financial, institutional, social-economic, and/or environmental risks to sustaining long-term project results?				
	• Are there political, social or financial risks that may jeopardize the sustainability of project outcomes?	• The exit strategy includes explicit interventions to ensure sustainability of relevant activities	• Program Framework Document • Risk Log	• Desk Review of Documents

	• What are the factors that will require attention in order to improve prospects of sustainability and potential for replication?	• The exit strategy includes explicit interventions to ensure sustainability of relevant activities and identifies relevant factors requiring attention in the future	• Program Framework Document	• Desk Review of Documents
	• Do the legal frameworks, policies, and governance structures and processes within which the project operates pose risks that may jeopardize sustainability of project benefits?	• The exit strategy identifies relevant socio-political risks and includes explicit interventions to mitigate same	• Program Framework Document • Risk Log	• Desk Review of Documents
	• Have key stakeholders identified their interest in project benefits beyond project-end and accepted responsibility for ensuring that project benefits continue to flow?	• Key stakeholders are assigned specific, agreed roles and responsibilities outlined in the exit strategy	• Program Framework Document • Risk Log	• Desk Review of Documents
	• Are there ongoing activities that may pose an environmental threat to the sustainability of project outcomes?	• The exit strategy identifies relevant environmental risks and includes explicit interventions to mitigate same	• Program Framework Document • Risk Log	• Desk Review of Documents
Impact: Are there indications that the project has contributed to, or enabled progress toward, reduced environmental stress and/or improved ecological status?				
	• Are there verifiable improvements in ecological status, or reductions in ecological stress, that can be linked directly to project interventions?	• The project has contributed directly to improved ecological conditions, including through reduced GHG emissions for energy generation	• Quarterly Reports • Annual Reports (PIR)	• Desk Review of Documents
Contribution to gender equality				
	To what extent was the UNDP initiative designed to appropriately incorporate in each outcome area contributions to attainment of gender equality? To what extent did UNDP support positive changes in terms of gender equality and were there any unintended effects? Provide example(s) of how the initiative contributes to gender equality. • Can results of the programme be disaggregated by sex?	• Level of monitoring of gender related issues	Project documents Evaluation reports UNDP staff Government partners • Beneficiaries	Desk review of secondary data Interviews with UNDP staff and government partners • Observations from field visits

Annex 3: List of People Interviewed

Facility	Names & contact Details
UNDP CO Programme Analyst UNDP CO M&E Focal Points	Nouralla Ahmed Nouralla.ahmed@undp.org +249 122635284 Nadia Hamid +249 187 122102 nadia.hamid@undp.org Suliman Maalla +249 187 122106 suliman.maalla@undp.org
UNDP RTA	Mr.Saliou Toure saliou.toure@undp.org
National Project Director at the Ministry of Energy and Mining	Eng. Hind Elamin +249 123497632 hind.elamin@wepsd.org
GEF Operational Focal Point at the Higher Council for Environment and Natural Resources	Dr.Hana Hamd Allah hanahamadalla2@yahoo.com Mobile:+249920020045
Renewable Energy Directorate - Electricity Holding Company -Ministry of Energy	Yasir Abdalla Saied, Sudan Mob: +249 123497630 sudanrenen@gmail.com
National Energy Research Centre (NERC)	Dr. Ratiba Haj ratibanouralla@gmail.com Mobile:+240123135039
Wind Project Site manager at Dongola	Eng. Omer Saeed Abdelgadir
1. EWT Netherlands 2. Tracebell Consultancy Company	Merijn Boon *Lead Project Manager* M(NL) +31 (0)6 52033 757 T +31 (0)88-9434546 m.boon@ewtdirectwind.com Matthias DROSCH T +49 6101 55 1433 matthias.drosch@tractebel.engie.com
Consultants recruited by the Project 1. Omer Roushdy is the International constant who wrote up the project document 2. Ron Mukanya carried the MTR	Omar Roushdy +20 2 25 24 17 99 +20 (0)10 690 36 456 omar.roushdy@ercc-carbon.com Ronald Mukanya ronald.mukanya@gmail.com ronald.mukanya@googlemail.com

Annex 4: List of Documents Consulted

1. Promoting Utility Scale Power Generation from Wind Energy, Project Identification Form, UNDP 2012
2. Promoting Utility Scale Power Generation from Wind Energy, LPAC Meeting Minutes, UNDP 2014
3. Promoting Utility Scale Power Generation from Wind Energy, Project Document, UNDP/GEF (2014)
4. Promoting Utility Scale Power Generation from Wind Energy, MTR Report, UNDP (2017)
5. Annual Project Implementation Reviews (PIRs), UNDP/GEF (2016-2021)
6. Combined Delivery Reports (CDRs), UNDP (2016-2021)
7. Intended Nationally Determined Contributions, Government of Sudan (2015)
8. 100 MW Wind Power Project in Dongola, Project Design Document, Government of Sudan (2013)
9. Sudan's Updated 1st Nationally Determined Contribution, HCENR (2021)
10. Final Report for Environmental & Social Impact Assessment for 180 Mw Red Sea Coast Wind Farms in Sudan, UKCC (2017)
11. Possible Impact of Onshore Wind Farms on Migratory Soaring Birds (MSB) Along the Red Sea Coast, Sudan, WEP (2017)
12. Institutional Setup and Coordination Mechanism for Sudan's National High Committee for Renewable Energy, WEP (2018)
13. Standard Power Purchase Agreement for Wind Turbines and Wind Parks in Sudan, WEP (2016)
14. Review of the Current Renewable Energy Curriculum and Programs in Sudanese Universities and Institutes – Findings Report, UKCC (2017)
15. Feed-in-Tariff for RE, Sudan, Nationally Appropriate Mitigation Action, WEP (2019)
16. The Updating of Renewable Energy Master Plan- Final Report, MWRE (2019)
17. Establishment of One-Stop Shop for Renewable Energy Investors, Final Report, WEP (2019)
18. Arab Future Energy Index (AFEX) – Renewable Energy, RCREEE (2019)
19. From Subsidy to Sustainability: Diagnostic Review of Sudan's Electricity Sector, World Bank (2019)
20. Empowering Sudan: Renewable Energy Addressing Poverty & Development, UNDP (2020)
21. Energy Profile Factsheet: Sudan, IRENA (2021)

22. GEF Evaluation Policy, GEF IEO, 2019
23. UNDP Revised Evaluation Policy, UNDP, 2019
24. Guidelines for GEF Agencies in Conducting Terminal Evaluation for Full-sized Projects, GEF, 2017
25. UNDP Evaluation Guidelines, Independent Evaluation Office of UNDP, 2019
26. Guidance for Conducting Terminal Evaluations of UNDP-Supported, GEF-Financed Projects, UNDP IEO, 2020
27. Outcome-Level Evaluations, A Companion Guide, UNDP, 2011
28. Glossary of Key Terms in Evaluation and Results Based Management, OECD, 2010
29. Ethical Guidelines for Evaluations, UNEG, 2018

Annex 5: Project Results Framework (at the Project Inception)

This project will contribute to achieving the following Country Programme Outcome as defined in CPAP or CPD: The Government of Sudan has the institutional framework to develop and implement MDG-based, pro-poor, equitable and inclusive socio-economic and environmental policies and strategies.
Country Programme Outcome Indicators: Capacities of national and sub-national authorities and communities for effective environmental governance, natural and renewable resources management and climate change strengthened.
Primary applicable Key Environment and Sustainable Development Key Result Area: 1. Mainstreaming environment and energy OR 2. Catalysing environmental finance OR 3. Promote climate change adaptation OR 4. Expanding access to environmental and energy services for the poor.
Applicable GEF Focal Area Objective: GEF-5 FA Objective # 3 (CCM-3): "Promote Investment in Renewable Energy Technologies".

Result	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
Project Objective: To overcome barriers to the market development of utility-scale wind farms in Sudan.	Introduction of renewable energy policies and regulations.	Current Renewable energy master plan	put in place Sudan renewable energy policy, law and regulation	Project monitoring reports and final evaluation.	Delay in the approval and ratification of the renewable energy laws and regulations
	Capacity of wind power installed	0 MW	Installing 100 MW capacity in Dongla	Electrical power sector reports	The volatile economic situation in Sudan may delay implementation.
	MWh of power generated by grid-connected wind energy.	0 MWH	Generating of 300,917 MWh/year from wind energy.	Electricity generation reports	Shortages of funds, labour and skills which strain its human and material resources.
Outcome 1: Grid-connected power generation from wind farm introduced.	1.1 Megawatts of installed grid-connected wind power.	1.1 - No MW produced from WP.	1.1 - 100 MW of grid-connected wind power installed at Dongola wind farm	1.1 - Project monitoring reports and final evaluation.	1.1 - As above.
	1.2 - Number of wind farms operating in Sudan.	1.2 – 0 wind farms	1.2 – Installing 4 wind farms (The Ministry of Water Resources and Electricity (MWRE) has a plan to build four wind farms).	1.2 - Progress reports on power plants installation.	1.2 - Lack of finance.
Outcome 2: Policy, institutional and regulatory framework adopted.	2.1 - Number of environmental and social guidelines developed for implementing wind farms.	2.1 - No, guideline existed	2.1 – Two guidelines for wind farm-specific EIA considerations (e.g. migrating birds, noise) and other hazards (e.g. civil and military aviation) developed.	2.1 - EIA studies and reports	2.1 - The assumption that the project will support conducting environmental studies including soaring bird's risks and mitigation measures.
	2.2 - Development of Standards Operating Procedures (SOPs) and technical specifications for establishment of wind farms.	2.2 - No SOPs	2.2 – SOPs for wind power plant is developed	2.2 - Documents of SOPs and specifications	2.2 - Since the Dongla wind farms contract was already agreed upon, the developed SOPs and specifications can only be applied for the other 3 wind farms
	2.3 - Development of a feed-in tariff (FiT) policy NAMA for wind power in Sudan	2.3 No feed-in tariff policy existed	2.3 - feed-in tariff policy NAMA for wind power in Sudan developed	2.3 - FiT policy document and NAMA project document and reports.	2.3 - The FiT NAMA project was developed and registered for support with NAMA domain.

Result	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
	2.4 - Extent to which RE policies and regulations are adopted and enforced.	2.4 - A bill has been drafted for RE policies.	2.4 - policies and legislation for renewable energy are effectively adopted and enforced	2.4 - Project monitoring reports and final evaluation.	2.4 - Assuming that the proposed legal and regulatory improvements pass swiftly through the Government and Parliamentary approval process.
Outcome 3: The wind technology support and delivery system trengthened.	3.1 - Number of individuals and organisations trained and capable of supporting activity in the Sudanese wind market.	3.1 - Preliminary wind measurements have been carried out as well as some feasibility assessments based on those measurements.	3.1.A - 100 engineers trained in wind technology (50 males & 50 females). 3.1.B 5 institutions supported in wind technology.	3.1 - Project reports.	3.1 - Lack of interest while the market opportunity is not yet clear to participants (this risk is minimal).
	3.2 – Development of a reliable national wind atlas.	3.2 - MWRE has developed a wind atlas based on extrapolation of world data with high probability of inaccuracy.	3.2 – Wind atlas developed	3.2 - Wind maps and atlas	3.2 - Lack of reporting by market participants, making collection of data difficult.
Outcome 4: Adaptive learning and replication plan supported.	4.1 - Quality Management System for Dongola wind farm is established.	4.1 - There is currently no plan for compiling and disseminating lessons-learned in wind power.	4.1 - Establishment of a quality management certification process (e.g. ISO 9001) for Dongola wind farm.	4.1 - Project reports. Obtaining the quality management certificate.	4.1 - The major risk is garnering interest by convincing individuals that there is a future for wind power in Sudan.
	4.2 - Number of educational tours conducted to wind farms in neighbouring countries	4.2 - Limited exchange of experiences with neighbouring countries with established wind farm like Egypt and Ethiopia.	4.2 – Ten Study tours undertaken to wind plants in the neighboring countries (including 50% female and 50% male).	4.2 - Project reports and annual work plans.	4.2 - Lack of fund

Annex 6: Performance Rating of GEF Projects

The main dimensions of project performance on which ratings are provided in terminal evaluation are outcomes, sustainability, quality of monitoring and evaluation, quality of implementation, and quality of execution.

Outcome ratings

The overall ratings on the outcomes of the project will be based on performance of the criteria of relevance, effectiveness and efficiency. A six-point rating scale is used to assess overall outcomes.

Highly Satisfactory (HS)	Level of outcomes achieved clearly exceeds expectations and/or there were no short comings
Satisfactory (S)	Level of outcomes achieved was as expected and/or there were no or minor short comings
Moderately Satisfactory (MS)	Level of outcomes achieved more or less as expected and/or there were moderate short comings
Moderately Unsatisfactory (MU)	Level of outcomes achieved somewhat lower than expected and/or there were significant shortcomings
Unsatisfactory (U)	Level of outcomes achieved substantially lower than expected and/or there were major short comings
Highly Unsatisfactory (U)	Only a negligible level of outcomes achieved and/or there were severe short comings
Unable to Assess (UA)	The available information does not allow an assessment of the level of outcome achievements

Sustainability Ratings

The sustainability will be assessed taking into account the risks related to financial, sociopolitical, institutional, and environmental sustainability of project outcomes. The evaluator may also take other risks into account that may affect sustainability. The overall sustainability will be assessed using a four-point scale.

Likely (L)	There is little or no risks to sustainability
Moderately Likely (ML)	There are moderate risks to sustainability
Moderately Unlikely (MU)	There are significant risks to sustainability
Unlikely (U)	There are severe risks to sustainability
Unable to Assess (UA)	Unable to assess the expected incidence and magnitude of risks to sustainability

Monitoring and Evaluation Ratings

Quality of project M&E are assessed in terms of design and implementation on a six point scale:

Highly Satisfactory (HS)	There were no short comings and quality of M&E design / implementation exceeded expectations
Satisfactory (S)	There were no or minor short comings and quality of M&E design / implementation meets expectations
Moderately Satisfactory (MS)	There were some short comings and quality of M&E design/implementation more or less meets expectations
Moderately Unsatisfactory (MU)	There were significant shortcomings and quality of M&E design / implementation somewhat lower than expected
Unsatisfactory (U)	There were major short comings and quality of M&E design/implementation substantially lower than expected
Highly Unsatisfactory (U)	There were severe short comings in M&E design/ implementation
Unable to Assess (UA)	The available information does not allow an assessment of the quality of M&E design / implementation

Implementation and Execution Rating

Quality of implementation and of execution will be rated separately. Quality of implementation pertains to the role and responsibilities discharged by the GEF Agencies that have direct access to GEF resources. Quality of Execution pertains to the roles and responsibilities discharged by the country or regional counterparts that received GEF funds from the GEF Agencies and executed the funded activities on ground. The performance will be rated on a six-point scale.

Highly Satisfactory (HS)	There were no short comings and quality of implementation / execution exceeded expectations
Satisfactory (S)	There were no or minor short comings and quality of implementation / execution meets expectations
Moderately Satisfactory (MS)	There were some short comings and quality of implementation / execution more or less meets expectations
Moderately Unsatisfactory (MU)	There were significant shortcomings and quality of implementation / execution somewhat lower than expected
Unsatisfactory (U)	There were major short comings and quality of implementation / execution substantially lower than expected
Highly Unsatisfactory (U)	There were severe short comings in quality of implementation / execution
Unable to Assess (UA)	The available information does not allow an assessment of the quality of implementation / execution

Annex 7: Evaluation Report Outline[26]

i. Opening page:

- Title of UNDP supported GEF financed project
- UNDP and GEF project ID#s.
- Evaluation time frame and date of evaluation report
- Region and countries included in the project
- GEF Operational Program/Strategic Program
- Implementing Partner and other project partners
- Evaluation team members
- Acknowledgements

ii. Executive Summary

- Project Summary Table
- Project Description (brief)
- Evaluation Rating Table
- Summary of conclusions, recommendations and lessons

iii. Acronyms and Abbreviations

1. Introduction

- Evaluation purpose
- Scope & Methodology
- Data collection and analysis
- Evaluation ethics
- Limitations

2. Project description and development context

- Project start and duration
- Development context
- Problems that the project sought to address
- Immediate and development objectives of the project
- Description of the project's Theory of Change
- Expected results
- Total resources
- Main stakeholders and key partners involved

3. Findings

(In addition to a descriptive assessment, all criteria marked with (*) must be rated)

3.1 Project Design / Formulation

- Analysis of LFA/Results Framework (Project logic /strategy; Indicators)
- Assumptions and Risks

[26] The presented TE Report outline is based on the 2020 UNDP/GEF TE guidelines that reflect the GEF-7 project development template. However, the project was prepared according to the GEF-6 project development template that was not identical with the GEF-7 template.

- Lessons from other relevant projects (e.g., same focal area) incorporated into project design
- Planned stakeholder participation
- Replication approach
- UNDP comparative advantage
- Linkages between project and other interventions within the sector
- Gender responsiveness of the project design
- Social and environmental safeguards

3.2 Project Implementation

- Adaptive management
- Actual stakeholder participation and partnership arrangements
- Project Finance and co-finance
- Monitoring & Evaluation: design at entry (*), implementation (*), overall assessment of M&E (*)
- UNDP implementation/oversight (*), Implementing Partner execution (*) and overall assessment of implementation/oversight and execution (*)
- Risk Management

3.3 Project Results and Impacts

- Progress towards objective and expected outcomes
- Relevance (*)
- Effectiveness
- Efficiency (*)
- Overall Project Outcome (*)
- Sustainability: financial(*), socio-political(*), institutional framework and governance(*), environmental(*), overall likelihood of sustainability(*)
- Country ownership
- Gender equality and women's empowerment
- Cross-cutting issues
- GEF additionality
- Catalytic/Replication effect
- Progress to impact

4. Main Findings, Conclusions, Recommendations, Lessons Learned

- Main Findings
- Conclusions
- Recommendations
- Lessons learned

5. Annexes

- Terms of Reference
- Evaluation Question Matrix
- List of persons interviewed
- List of documents reviewed
- Project results framework
- Performance ratings of GEF projects

- Evaluation Consultant Agreement Form
- Annexed in a separate file: TE audit trail

Annex 8: Evaluation Consultant Agreement Form

Agreement to abide by the Code of Conduct for Evaluation in the UN System

Evaluators:

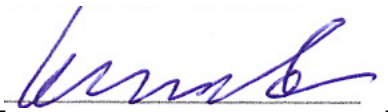
1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect people's right to provide information in confidence and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study imitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

Name of Consultant: Dalibor Kysela

Name of Consultancy Organization (where relevant)**:** N.A.

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at Vienna

Signature: 

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Evaluators:

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6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study imitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

Name of Consultant: Abdelrahman Elamin Abdelgadir

Name of Consultancy Organization (where relevant)**:** _____N.A._____

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at Khartoum

Signature: _____

Annex 9: Audit Trail – annexed as separate file