REQUEST FOR CEO APPROVAL

PROJECT TYPE: FULL-SIZED PROJECT
TYPE OF TRUST FUND: GEF TRUST FUND

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PART I: PROJECT INFORMATION

Project Title: **NAMA Support for the Tunisian Solar Plan**			
Country(ies):	Tunisia	GEF Project ID:[1]	5340
GEF Agency(ies):	UNDP (select) (select)	GEF Agency Project ID:	5182
Other Executing Partner(s):	National Agency for Energy Conservation of Tunisia (Agence Nationale pour la Maîtrise de l'Energie, ANME)	Submission Date:	02 September 2014 September 30, 2014
GEF Focal Area (s):	Climate Change	Project Duration(Months)	60
Name of Parent Program (if applicable): ➢ For SFM/REDD+ ☐ ➢ For SGP ☐	N/A	Agency Fee ($):	337,532

A. FOCAL AREA STRATEGY FRAMEWORK[2]

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Grant Amount ($)	Cofinancing ($)
CCM-3 (select)	Favourable policy and regulatory environment created for renewable energy investments	Renewable energy policy and regulation in place	GEF TF	1,687,502	15,406,640
CCM-3 (select)	Investment in renewable energy technologies increased	Volume of investment mobilised	GEF TF	1,865,466	49,976,000
		Total project costs		3,552,968	65,382,640

B. PROJECT FRAMEWORK

Project Objective: To transform Tunisia's energy sector for achieving large-scale emission reductions through the deployment of a Tunisian Solar Plan (TSP) NAMA.

Project Component	Grant Type[3]	Expected Outcomes	Expected Outputs	Trust Fund	Indicative Grant Amount ($)	Indicative Cofinancing ($)
1. The enabling framework and methodologies are established to support implementation of the Tunisian Solar Plan (TSP) NAMA.	TA	The enabling conditions, methodologies and tools are developed for de-risking the national policy environment for implementing the Tunisian Solar Plan	1.1 Establishment of a high-level inter-ministerial TSP committee 1.2 Establishment of a Secretariat to coordinate energy generation and end-use stakeholders, accompanied by recommendation and implementation of economic and financial tools to support the TSP NAMA 1.3 Use of system dynamics	GEFTF	394,945	790,000

[1] Project ID number will be assigned by GEFSEC.
[2] Refer to the Focal Area/LDCF/SCCF Results Framework when completing Table A.
[3] TA includes capacity building, and research and development.

		through a TSP NAMA..	modelling (SDM) and De-risking Renewable Energy Investment (DREI) scenario analyses to investigate (i) the sectoral emission reduction potential of the TSP to 2030, (ii) cross-sectoral co-benefits such as job creation and contribution to economic growth, and (iii) the cost-effectiveness of public instruments identified under 1.2 for de-risking investments in the TSP NAMA			
2. Architecture for Nationally Appropriate Mitigation Action (NAMA) development and implementation is established.	TA	A coherent climate finance framework is established for the development of NAMAs to catalyse the transformational capacity of the TSP to generate large emission reductions.	2.1 Development of a set of guidelines to establish national NAMA eligibility and design criteria 2.2 Re-organisation and strengthening of the Tunisian DNA as the national coordinating institution and quality assurer for NAMAs 2.3 Establishment of a baseline for calculating emission reductions from grid-connected renewable energy through development of a tool for annually updating the emission factor of the national electricity system 2.4 Legal frameworks relevant to renewable energy developed and adopted to catalyse private investment to support implementation of the Tunisian Solar Plan NAMA: • Public-Private-Partnership Act; • Grid Code; • Independent Energy regulator 2.5 Development of three comprehensive sectoral technology action plans for PV, wind and CSP 2.6 Support to the Energy Transition Fund to further diversify its sources of capitalisation (e.g. concessional loans, green credit lines, fiscal incentives, donor contributions, a carbon tax, and climate finance) and its strategic management 2.7 Development and implementation of a territorial performance-based mechanism (TPBM) to catalyse investment for NAMA implementation in (sub-national) regions 2.8 Development of guidelines for	GEFTF	1,212,200	13,876,308

			social and environmental safeguards of RE projects in the TSP NAMA based on international benchmarks (e.g. World Bank) 2.9 Lessons-learned, experiences and best practices related to the development of energy NAMAs compiled and disseminated for operationalising MENA national solar plans (e.g. Morocco, Egypt, Jordan, Lebanon) and to demonstrate an architecture for leveraging climate finance			
3. Design and implementation of renewable energy project in TSP NAMA to demonstrate the transformational role of the Tunisian Solar Plan in reducing GHG emissions.	Inv	The TSP NAMA is operationalised by demonstrating proof-of-concept energy projects with quantified GHG emission reductions.	3.1 One private-sector supported wind energy project (Gabes 24 MW grid-connected wind farm) and one public-sector supported PV project (Tozeur 10MW PV) are implemented to validate the adopted framework and methodologies	GEFTF	1,776,634	47,477,200
			Subtotal		3,383,779	62,143,508
			Project Management Cost (PMC)[4]	GEFTF	169,189	3,239,132
			Total Project Cost		3,552,968	65,382,640

C. SOURCES OF CONFIRMED COFINANCING FOR THE PROJECT BY SOURCE AND BY NAME ($)

Please include letters confirming cofinancing for the project with this form

Sources of Co-financing	Name of Co-financier (source)	Type of Cofinancing	Cofinancing Amount ($)
National Government	ANME	Grant	14,506,640
National Government	ANME	In-Kind	200,000
National Government	MELPSD (Ministry of Equipment, Land Planning and Sustainable Development)	In-Kind	100,000
GEF Agency	UNDP	Grant	600,000
Private Sector	Enerciel	Grant[5]	33,476,000
National Government	STEG	Grant[6]	16,500,000
(select)		(select)	

[4] $25,000 of the PMC will be Direct Project Costs.

[5] The Enerciel co-financing is grant (cash) co-financing as far as the UNDP-implemented, GEF-financed project is concerned. It is equity investment in the baseline project.

[6] The STEG co-financing is grant (cash) co-financing as far as the UNDP-implemented, GEF-financed project is concerned. It consists of debt (loan) investment in the baseline project.

(select)		(select)	
(select)		(select)	
Total Co-financing			65,382,640

D. TRUST FUND RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY[1]

GEF Agency	Type of Trust Fund	Focal Area	Country Name/ Global	(in $)		
				Grant Amount (a)	Agency Fee (b)[2]	Total c=a+b
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
Total Grant Resources				0	0	0

[1] In case of a single focal area, single country, single GEF Agency project, and single trust fund project, no need to provide information for this table. PMC amount from Table B should be included proportionately to the focal area amount in this table.

[2] Indicate fees related to this project.

F. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

Component	Grant Amount ($)	Cofinancing ($)	Project Total ($)
International Consultants	708,645	2,700,000	3,408,645
National/Local Consultants	395,000	1,500,000	1,895,000

G. DOES THE PROJECT INCLUDE A "NON-GRANT" INSTRUMENT? No

(If non-grant instruments are used, provide in Annex D an indicative calendar of expected reflows to your Agency and to the GEF/LDCF/SCCF/NPIF Trust Fund).

PART II: PROJECT JUSTIFICATION

A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN OF THE ORIGINAL PIF[7]

A.1 National strategies and plans or reports and assessments under relevant conventions, if applicable, i.e. NBSAPs, national communications, TNAs, NCSA, NIPs, PRSPs, NPFE, Biennial Update Reports, etc.

No Changes.

Replication and sustainability beyond the lifetime of the project will be ensured because the project supports the medium-to-long term development policies and strategies of Tunisia. More details are given in Section 1.3.2 of the Project Document. Some of these policies and strategies (including relevant national reports) are: (i) direct support to the **Tunisian Solar Plan**, which is the overarching strategy to reach a 30% renewable energy target by 2030, with the broad objective of delivering sector-scale emission reductions that would be consistent with the NAMA approach; (ii) In 2012, Tunisia developed its **National Climate Change Strategy**. This outlines, among other elements, Tunisia's approach to climate change mitigation and adaptation under three different climate change scenarios and outcomes of

[7] For questions A.1 –A.7 in Part II, if there are no changes since PIF and if not specifically requested in the review sheet at PIF stage, then no need to respond, please enter "NA" after the respective question

international negotiations. The NCCS also highlights the need to develop a framework to bring more coherence to the multiple interventions in climate change taking place in Tunisia; (iii) Tunisia conducted a **National Capacity Self-Assessment** for the three Conventions through a UNDP-implemented, GEF-financed project. The NCSA covered the: status of regulatory and institutional frameworks, national communications, a study on vulnerability and adaptation to climate change and potential sectoral GHG emission reduction projects. The NCSA highlighted the critical role that renewable energy can play in improving Tunisia's energy security and reducing its GHG emissions, and the importance of institutional strengthening and coordination for maximising the impacts of mitigation actions; (iv) Tunisia submitted its **Initial National Communication** in 2001 and has recently finalised its **Second National Communication**. The NAMA TSP project is fully aligned with the SNC, notably with regard to its support to wind and solar energy, its technical support to NAMAs, and its emphasis on capacity development and institutional strengthening; (v) a **Low Emission Development Strategy** is being developed for Tunisia with the support of UNDP, and is aligned with the TSP. Financial resources are being mobilised for its implementation. The Strategy will focus on the following aspects of low-carbon development: (1) the definition of strategic objectives; (2) institutional structures required; (3) national dialogues; and (4) awareness raising; (vi) with the technical assistance of UNDP, ANME has developed a **NAMA Strategy for the Energy Sector**, consisting of ten components for NAMA preparedness. These components are: (1) institutional structures, (2) identification of priority NAMAs, (3) identification of sustainable development criteria, (4) development of priority NAMAs, (5) establish MRV systems for priority NAMAs, (6) develop a NAMA portfolio, (7) awareness raising and sensitization, (8) capacity building, (9) sub-regional NAMA, and (10) monitoring and evaluation of the strategy. The NAMA TSP project will essentially flesh out and operationalise this NAMA Strategy for the Tunisian Solar Plan; and (vii) the initiatives supported by the German Federal Ministry for the Environment, Nature Conservation, Building & Nuclear Safety (BMU), the German Federal Ministry for Economic Cooperation and Development (implemented by the German agency GIZ) and World Bank are discussed in Section 1.3.2 of the Project Document.

A.2. GEF focal area and/or fund(s) strategies, eligibility criteria and priorities.
No changes. In accordance with Objective 3 of the GEF Climate Change Focal Area Strategy for GEF-5, the project will promote investments in renewable energy.

A.3 The GEF Agency's comparative advantage:
No changes. The GEF Agency's comparative advantage is as detailed in the PIF. Having undertaken the project preparation process, including extensive stakeholder consultations, the GEF agency has further strengthened its ties and contacts with the relevant stakeholders.

A.4. The baseline project and the problem that it seeks to address:
The baseline consists of two renewable energy projects: (1) a public-funded 10 MW PV plant at Tozeur; and (2) a private-funded 24 MW wind farm at the Gabes cement factory. There is no change in the 10 MW PV plant. The only change relates to the fact that the wind farm project was initially expected to be implemented under Decree 2009-2773 for auto-production at the Gabes cement factory. This project will now be implemented under the imminent renewable energy law discussed in Section 1.2.4.2 of the Project Document.

A.5. Incremental /Additional cost reasoning: describe the incremental (GEF Trust Fund/NPIF) or additional (LDCF/SCCF) activities requested for GEF/LDCF/SCCF/NPIF financing and the associated global environmental benefits (GEF Trust Fund) or associated adaptation benefits (LDCF/SCCF) to be delivered by the project:

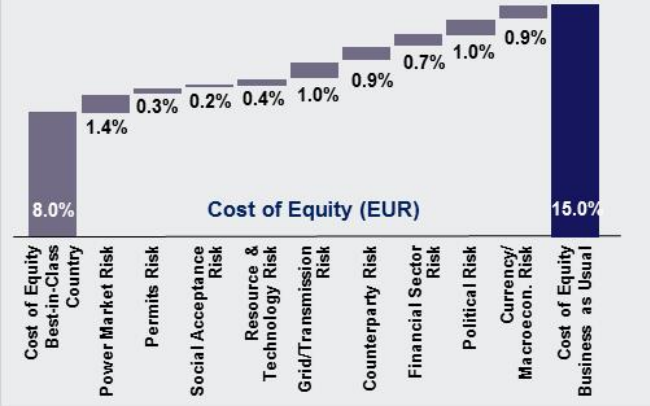
The incremental reasoning relating to the baseline projects is detailed in Section 2.2 of the Project Document. In brief, the baseline projects are expected to be implemented in the absence of the UNDP-implemented, GEF-financed project but with known deficiencies. The principal deficiencies have been identified as being: no planned use of PV technologies that are designed to operate in desert climatic conditions in the case of Tozeur, and no planned use of adequate interface electronics to match the technical characteristics of renewable electricity produced by the baseline projects to those of grid electricity. The investments under Component 3 of the project will address these technological and technical issues to enhance the performance of the baseline projects and thereby ensure delivery of the expected global environmental benefits (see Section 2.4 of the Project Document) The incremental reasoning is also related to scaled-up mitigation action in the power sector – i.e. to the Tunisian Solar Plan, TSP – through the removal of barriers for catalysing investments required to implement renewable energy technologies in Tunisia. As is discussed in Sections

1.5, 1.6 and 2 of the Project Document, the technical assistance components of the project propose to overcome prevailing barriers through the implementation of policy and financial de-risking instruments.

Use of UNDP's Derisking Methodology

An innovative aspect of the project is its use of UNDP's Derisking Renewable Energy Investment (DREI) methodology. A preliminary DREI analysis has been performed as part of the Project Document preparation. This analysis: (i) quantifies the current risks to wind energy and solar PV investment in Tunisia (figure below), (ii) identifies and costs a package of de-risking instruments to address these risks and to promote investment to achieve the TSP's targets, and (iii) calculates the levelised cost of electricity (LCOE) for wind energy and solar PV, before and after implementation of the de-risking instruments. A summary of the results of the DREI analysis is found in Annex E of this document.

Figure: Impact of risk categories on the cost of equity for wind energy and solar PV investments in Tunisia



Source: interviews with wind energy and solar PV investors and developers; modelling; best-in-class country is assumed as Germany; see Annex C of the DREI Tunisia report for details of assumptions and methodology.

By the end of the project, it is expected that:

- The Government will develop, adopt or enhance the legal and regulatory frameworks that will be conducive for private-sector investment in grid-connected renewable electricity.
- Institutional mechanisms will be established to provide high-level political support and coordination for the implementation of the TSP NAMA. The institutional structure to provide quality assurance for NAMAs will be established.
- National institutions will have developed in-house skills to carry out dynamic, long-term integrated energy planning to inform the low-carbon development of Tunisia; to compare the relative merits of financial instruments to promote renewable energies under the TSP; and to formulate NAMAs to channel international climate finance to support the implementation of the TSP.
- The optimal mix of public policy de-risking and financial de-risking instruments to achieve the objectives of the TSP in a NAMA will be identified, and a road map developed for guiding targeted and coordinated interventions by different stakeholders in the renewable electricity sector (see Section 1.6 and Annex 7.3).
- The two baseline projects will demonstrate improved performance in terms of clean electricity output that is compatible with grid stability and the utilisation of technologies that can be adopted by future renewable energy generation projects.
- An MRV system will be designed to provide quality assurance on GHG emission reductions accruing from the TSP NAMA.
- The Energy Transition Fund will be supported to be able to attract financing from a larger spectrum of sources (e.g. multilateral, bilateral, public, private, climate finance, carbon tax, etc.), and to operate different RE financing modalities (e.g. public equity financing, green credit lines, concessional loans, etc.).

A.6 Risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and measures that address these risks:

The main identified risks to the successful implementation of the project include:

Risk	Rating	Mitigation measures
Climate Change Risks	Low	The risk that climate change will make it less likely that renewable energy projects will be implemented is low due to: (i) the low climate sensitivity of wind power in Tunisia: as the Second National Communication observes, the occurrence of extreme weather events in the form of wind storms is rare and the impact of higher air temperature on changes in air density (leading to power loss) is insignificant; (ii) the impact of increased cloudiness – impeding solar energy potential – arising from increasing Mediterranean evaporation rates is likely to be minimal, confined to specific coastal areas; and (iii) the impacts of future climate change are expected to increase political interest in addressing the drivers of such change through large-scale mitigation actions.
Environmental Risks	Low	Although Decree No. 2005-1991 and the Order of the Minister of Environment and Sustainable Development 2006 do not require an Environmental Impact Assessment (EIA) to be carried out for power plants having an installed capacity less than 300 MW, the two baseline projects have carried out independent EIAs using World Bank standards. In the case of the Tozeur PV project, the Sustainable Development Directive of KfW was also used. Further, the baseline projects have been subject to a screening according to UNDP's Environmental and Social Safeguards. Based on the lessons-learned from the EIAs and screening, a set of guidelines will be developed for future utility-scale RE projects in the TSP. Also, the UNDP-implemented, GEF-financed project will develop NAMA eligibility criteria and indicators to ensure the environmental sustainability of utility-scale RE projects.
Social Risks	Medium	The TSP has been developed and revised since 2009, and it has received significant public visibility. It is also aligned with concurrent large-scale renewable energy generation programmes such as Desertec, the Mediterranean Solar Plan and counterpart programmes in MENA countries that continue to receive world-wide attention. The social acceptability of the TSP is very high in Tunisia, particularly as it is specifically intended to boost job creation (a social and political priority in post-revolution Tunisia). One concern has been the resistance to the TSP shown by STEG employee unions. Discussions with key stakeholders have revealed that the voices of unions have been growing after the revolution in early 2011 but this may be a transient phenomenon. The project will communicate the sustainable development benefits of the TSP and calm fears that promoting private investment in the power sector is equivalent to privatisation of the power sector.
Political Risks	Medium	Since the revolution in early 2011, Tunisia has witnessed several transitional governments. After adoption of the new constitution on 26th January 2014, a new apolitical, technocratic government was put in place and should ensure the governance of the nation until the next elections that are expected to take place on 26 October 2014. This transitional phase is not expected to jeopardise the implementation of the TSP, which attracts cross-party support for its national energy security and job creation

Risk	Rating	Mitigation measures
		benefits. A recent analysis (January 2013) of the vulnerability of Tunisia (and the wider MENA region) to energy and resource scarcities concludes that "Tunisia remains fragile both politically and economically, but there is also potential for the new government to successfully manage this transition".[8] This study also makes the case that addressing the climate-energy-resource security nexus will be vital to establishing socio-political stability in Tunisia.
Financial Risks	Medium	Implementation of the TSP will require approximately €5-6 billion. This substantial sum is well beyond the capacity of the Government of Tunisia to invest. This is the reason why the Government of Tunisia is seeking to attract private investment and international funding to fund up to ~80% of the TSP NAMA. The prevailing conditions pose significant barriers, and hence risks, to catalysing private investment and international funding. The UNDP-implemented, GEF-financed project will actively address these risks by removing key barriers, thereby mitigating financial risks. The design of the project has been informed to a considerable extent by detailed quantitative analysis of financial risks – and their impacts on the cost of capital (debt and equity) – facing renewable energy investments in Tunisia. While the proposed RE Law is expected to promote private investments through IPPs (Section 1.2.4.2), there is still the risk that it may not be promulgated or that there are delays in its promulgation in anticipation of the next parliamentary elections. There is also the risk that the proposed Independent Energy Regulator (IER) will be resisted. In both cases, DREI analysis will be used to demonstrate the significant leverage ratio of the proposed policy de-risking instruments (e.g. promotion of IPPs and the setting up of a IER, see Section 1.6 and Annex 7.3) to catalyse investments to implement the TSP NAMA.

A.7. Coordination with other relevant GEF financed initiatives

The ANME-UNDP-GEF project, **Private Sector Led Development of On-grid Wind Power in Tunisia** (2009-2014, US$2,000,000), represents complementary technical assistance to the project proposed here. Importantly, this GEF project does not have an investment component but is carrying out feasibility studies and proposing regulatory reforms to catalyse private investment in the wind sector through the establishment of IPPs for generating renewable electricity. The proposed UNDP-implemented, GEF-financed project leverages the TA work achieved by the wind project and will extend its impact by directly supporting the wind farm investment at Gabes in a NAMA framework. The UNDP-implemented, GEF-financed project proposed here will not overlap in implementation timeline with the wind project, which will terminate by December 2014.

The MELPSD-UNDP-GEF project, **Addressing Climate Change Vulnerabilities and Risks in Vulnerable Coastal Areas of Tunisia** (2014-2020, US$3,552,968): Despite the fact that the Tunisian Solar Plan NAMA project and the 'Addressing Climate Change Vulnerabilities and Risks in Vulnerable Coastal Areas' project are tackling different thematic areas, there are certainly opportunities for coordination over the next 6 years. First, the Ministry of Equipment, Land Use Planning and Sustainable Development (MELPSD) is executing the SCCF project through its Agency for Coastal Protection and Planning. As MELPSD also hosts the UNFCCC Climate Focal Point and the GEF Operational Focal Point, institutional coordination is assured. Second, as wind mapping has indicated that some of the highest-potential wind areas are in the coastal zone, coordination is expected between the two projects, especially with regard to strengthening the regulatory framework for environmental and social impact issues in the coastal regions. Outcome 1 of the SCCF project involves **"**Institutional capacity to plan for and respond to increasing climate change risks in coastal areas is improved", with Output 1.1. ("Regulations and enforcement mechanisms governing coastal land use and EIA

[8] Mabey N. *et al*. (2013), *MENA Democratic Transition – Delivering Climate, Energy and Resource Security*.

strengthened to include climate risks management requirements, with a particular focus on siting and construction of infrastructure and tourist facilities" being of particular relevance to Output 2.8 of the TSP NAMA project ("Development of guidelines for environmental and social safeguards of utility-scale RE projects implemented under the TSP NAMA, based on international benchmarks (e.g. World Bank)".

The SCCF project is an integrated project that adopts a risk-based approach to climate change adaptation. Local development is one of the interventions, and the project aims at making local development plans more risk-based and climate-compatible. The local development integrated approach will be multi-sectoral. Better coastal management will certainly take into consideration the energy sector as one of the key sectors for resilient growth and more sustainable development in the coastal zone, which houses 70% of the economic activity in Tunisia.

The Ministry of Equipment, Land Planning and Sustainable Development, which is a key stakeholder in the TSP NAMA project, is coordinating the preparation of the **First Biennial Update Report (FBUR) for Tunisia** under a UNDP-implemented, GEF-financed enabling activity (GEF Project ID 5892). The components of the FBUR relating to the national GHG inventory (Component 2 of the EA) and climate change mitigation (Component 3 of the EA) activities for the energy sector will be carried out by ANME, which is also the national executing partner of the TSP NAMA project. The timelines of the two projects will overlap: 2014-2020 in the case of the TSP NAMA project, and 2014-2015 in the case of the First BUR. For the energy sector in particular, the TSP NAMA will feature prominently in terms of:

(1) the voluntary projected emissions reductions scenarios to 2030; and
(2) actual emission reductions from the implementation of the TSP NAMA during the reporting cycle.

The TSP NAMA project will contribute to the reporting needs of the First BUR in several ways, namely: (i) by addressing the constraints and gaps and related financial, technical and capacity needs (Component 4) that have been determined as being material; (ii) the De-Risking Renewable Energy Investment (DREI) analyses will specifically target the elimination or reduction of financial barriers for scaling-up investments in the TSP, and can serve as a basis for reporting purposes in the First BUR. Similarly, the enabling activities of the First BUR will support or inform those of the TSP NAMA project. For instance, Component 5 of the First BUR seeks to establish a domestic MRV system by proposing the necessary institutional arrangements and institutional capacity building needs. The recommendations that will be reported in the First BUR may then be implemented under Component 2 of the TSP NAMA project. Further, the First BUR will enhance the data collection and management system for national GHG inventories, which will then be used for developing MRV systems under Component 2 of the TSP NAMA project. There will also be common but complementary activities between the two projects that will facilitate learning and foster both human and institutional capacity building. One example is the development of Technology Action Plans (TAPs) in the First BUR and TSP NAMA. While the TSP NAMA will focus on three TAPs related to PV, wind and CSP under the TSP, the First BUR may then focus on TAPs in other sectors. Because of the difference in project timelines, lessons learned from TAP development in the First BUR may then be used to expedite TAP development under the TSP NAMA.

B. ADDITIONAL INFORMATION NOT ADDRESSED AT PIF STAGE:

B.1 Describe how the stakeholders will be engaged in project implementation.
The design and conceptualisation of the project have been carried out using multi-stakeholder processes. This was a key consideration in project development for two main reasons: (1) the 'meta-technology' characteristics of the power sector imply a diverse set of stakeholders from the public sector, the private sector and civil society are directly involved across the value chain spanning electricity generation to end-use; and (2) to ensure national institutional ownership that will aid the successful implementation of the project. The stakeholders listed below were actively engaged in preparation of the UNDP-implemented, GEF-financed TSP NAMA project. Their roles and responsibilities during project implementation are also captured in the table below.

Table 1. Roles and responsibilities of stakeholders in the project.

Stakeholder	Roles and responsibilities (project preparation & implementation)

National Agency for Energy Conservation (ANME)	ANME has coordinated stakeholder consultations during preparation of the project. During the implementation phase, ANME will be the Executing Agency, will host the Project Management Unit (PMU) and will chair the Project Steering Committee (PSC). Building on previous work undertaken in conjunction with GIZ (NAMA Cement) and BMU (NAMA Buildings), ANME will support NAMA design and implementation. The UNDP-implemented, GEF-financed project will coordinate very closely with GIZ-funded projects, namely (1) capacity development for GHG inventory and MRV in Tunisia, and (2) the establishment of a project team for the Tunisian Solar Plan. Both projects are implemented by ANME. Another project that will be implemented by ANME and that will be closely coordinated with the UNDP-implemented, GEF-financed project is the Partnership for Market Readiness (PMR). In particular, the development of an MRV mechanism for the energy sector by the PMR will be of relevance.
Directorate General for Energy (DGE)	DGE is a department housed within the Ministry of Industry, tasked will developing the overall energy policy of the Government. Renewable energy policy, including the TSP, is an integral part of the overall energy policy. There is a long history of collaboration between ANME and DGE, especially regarding the technical aspects of energy policy and strategy development. The project team will work very closely with DGE to develop policy and financial de-risking instruments. DGE was involved in the project design stage, particularly with regard to the forthcoming RE Law.
Société Tunisienne de l'Électricité et du Gaz (STEG)	STEG has a quasi-monopoly in Tunisia on the generation, transmission and distribution of electricity. It is also owner of the 10 MW Tozeur PV project identified in the baseline. The UNDP-implemented, GEF-financed project has been developed in close consultation with STEG. During project implementation, STEG will be responsible for implementing the 10 MW PV project at Tozeur, including participation in the design and implementation of the performance-based mechanism to promote renewable energies based on a territorial approach (Annex 7.6 in Project Document), and with the view to delivering multiple sustainable development dividends. STEG will also be closely involved in baseline development for grid-connected RE projects forming part of the TSP NAMA, and in the design and implementation of the grid code. STEG is expected to play a key role in the design and operationalisation of an Independent Energy Regulator in Tunisia.
NGOs	Few NGOs are active in the field of renewable energy in Tunisia. The principal NGO active in this field is the Association Tunisienne pour la Maîtrise de l'Energie (ATME), which was consulted during project development. During project implementation, and as an NGO representative, ATME will have an active role in the PSC. The Tunisian Wind Energy Association was also consulted during the project design phase. More specifically, the barriers and investment risks faced by proponents of wind energy were discussed with its members, as well as a discussion of the preliminary results of the De-risking Renewable Energy Investment (DREI) analysis that is presented in the Project Document and the accompanying DREI report for Tunisia.
Private sector – UTICA (Union Tunisienne de l'Industrie du Commerce et de l'Artisanat), and EnerCiel & Cimenterie de Gabes	Because of the prevailing barriers, there is currently limited private sector involvement in renewable energies in Tunisia. The most prominent private developer to date, UPC Wind/EnerCiel, has been heavily involved in preparation of the UNDP-implemented, GEF-financed project. Since UPC Wind/EnerCiel is also the owner of the Gabes wind farm baseline project, it will continue to be a key stakeholder throughout project implementation. Further, UPC Wind/EnerCiel will be a member of the Project Steering Committee. Cimenterie de Gabes will also be closely involved in project

	implementation since it is beneficiary of the wind farm at Gabes. The DREI methodology, which has been used in the preparation of the project, and will be used in Component 1 to assist the NAMA preparation, involves active outreach to the private sector to solicit its quantitative feedback on the barriers and investment risks to renewable energy in Tunisia. The DREI analysis performed for this Project Document involved structured interviews with 12 private sector investors and financiers, both domestic and international. In order to develop better linkages with the private sector, the project will also involve UTICA very closely in project implementation and monitoring and evaluation. UTICA is an umbrella organisation that represents large-scale and SME enterprises. It has a working group devoted to energy in industry and commerce.
Ministry of Economics and Finance (MEF)	The Ministry of Economics and Finance will be involved in the establishment of climate financing mechanisms during project implementation. The Ministry is expected to be a key member of the high-level Inter-Ministerial Committee that will be established by the UNDP-implemented, GEF-financed project. It will also play a critical role in the design and administration of financial instruments to support implementation of renewable energy technologies and the means of capitalising the restructured Energy Transition Fund that is proposed in Component 2 of this project. The Ministry will also be involved in the design and implementation of the performance-based mechanism based on a territorial approach (Annex 7.6 in Project Document) to promote RES.
Ministry of Equipment, Land Planning and Sustainable Development (MELPSD)	The GEF Operational Focal Point and the DNA are hosted within MELPSD. The former was involved during the PIF and project preparation phases and will continue his involvement during project implementation. In the PPG phase, the members of the DNA Committee were consulted, especially regarding Outputs 2.1 and 2.2. The project will support the institutional structures of the Ministry to act as the national coordinating institution and provide quality assurance for NAMAs through dedicated training. In this capacity, MELPSD will form part of the Inter-Ministerial Committee to provide high-level political support for implementation of the TSP. A set of NAMA eligibility criteria will be developed by the project and will be used by MELPSD to screen all NAMAs proposed in Tunisia (for example, see Annex 7.1 in Project Document).
GIZ/BMU	GIZ has been consulted throughout all the stages of project design and conceptualisation, specifically – but not exclusively – in regard to the projects discussed in Section 1.3.2 in the Project Document. Since GIZ is working in close collaboration with ANME, seamless coordination with projects implemented by GIZ will be ensured. Further, lessons-learned from the GIZ projects will be drawn upon when implementing the UNDP-implemented, GEF-financed project.

B.2 Describe the socioeconomic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support the achievement of global environment benefits (GEF Trust Fund/NPIF) or adaptation benefits (LDCF/SCCF):

The development of a NAMA in the power sector in Tunisia should be contextualised within the priority of achieving sustainable development. As such, the project is embedded in a context in which the delivery of national socio-economic benefits is equally important as the country's contribution to GHG emission reductions. The identification of cost-effective mitigation measures in the power sector, and their implementation as a TSP NAMA, will provide a clear demonstration of effective mechanisms to integrate national sustainable development and greenhouse gas mitigation

goals. Furthermore, the project forms part of Tunisia's ongoing process of defining a low-carbon development strategy (please see Section 1.3.2 of the Project Document), which forms part of a broader process to develop a low-carbon, climate-resilient development pathway for the country.

The specific dimensions of the socio-economic benefits to be derived from this project will be clearly spelled out as mitigation option analyses are carried out and NAMA designs are developed. However, the project will fully incorporate the socio-economic dimension in the NAMA design and implementation process. This includes contributing to:

- Increasing security and sovereignty of energy supply at the national level by reducing dependence on imported gas;
- Having high-quality access to energy at competitive prices and reducing the impact on natural resources and environment;
- Increasing social equality and reducing energy poverty, through increased access to quality and affordable energy services, especially in the (sub-national) regions;
- Expanding electricity grid coverage to capitalise on indigenous renewable energy sources that will facilitate rural electricity programmes using appropriate and cost-effective technologies;
- Facilitating the creation of conditions for sustainable socio-economic development in rural, isolated villages and country borders by improving the quality of life of the rural population and encouraging the promotion of productive uses of energy;
- Developing a vibrant renewable energy supply chain in Tunisia that will generate green jobs;
- Promoting the coordination of financing instruments and tools with public and private entities in order to allow better access to economic resources and financing for projects;
- Gender issues will be addressed in the Regions through poverty alleviation and job creation.

Global Environmental Benefits

Direct GHG emission reductions

Using a grid emission factor of 0.5298 tCO_2/MWh (see calculations in Annex 7.7 of the Project Document) for the Tunisian electricity system, the direct emission reductions from the baseline projects are expected to be approximately 8,954 tCO_2/year for the Tozeur 10 MW PV plant and 45,775 tCO_2/year (for the 24 MW Gabes wind farm). During the lifetime of the UNDP-implemented, GEF-financed project, the baseline projects will deliver 218,900 tCO_2 in cumulative emission reductions for the period 2016-2019. Assuming a useful investment lifetime of 20 years, the combined cumulative direct emission reductions will amount to 1.09 $MtCO_2$, at an abatement cost of 3.55 US$GEF/$tCO_2$. This is in line with the value given in the PIF after updating the grid emission factor (see Annex 7.7 of the Project Document for details).

As explained in Annex 7.7 of the Project Document, a causality factor of 40% has been applied to the cumulative direct emissions reductions to give adjusted direct project emissions reductions of 0.44 $MtCO_2$. This approach gives a more conservative estimate of direct emissions reductions since the baseline projects would have been implemented in the absence of the UNDP-implemented, GEF-financed project. The causality factor provides a measure of the enhancements that the GEF interventions will bring to the baseline projects, which then allows a more realistic calculation of the cost-effectiveness of GEF interventions. In this scenario, the abatement cost is 8.12 US$GEF/$tCO_2$.

Indirect GHG emission reductions

Indirect emission reductions are expected to be substantial, arising from the policy de-risking, capacity development and institutional strengthening aspects of the project – specifically:

- Output 1.2: Definition and implementation of economic and financial tools to support the TSP.
- Output 2.4: Legal frameworks related to renewable energy developed and adopted to catalyse private-sector investment to support implementation of the TSP.
- Output 2.5: Development of 3 comprehensive technology-specific (wind, PV, CSP) sectoral NAMA action plans.

- Output 2.6: Support to the Energy Transition Fund.
- Output 2.7: Development and implementation of a Territorial Performance-Based Mechanism (TPBM) to catalyse investment for NAMA implementation.
- Output 2.8: Dissemination of best practices.

Using a conservative approach, indirect emission reductions have been calculated using both the top-down and bottom-up approaches. The detailed calculations are given in Annex 7.7 of the Project Document.

Top-down approach

A replication factor of 4 has been applied to the direct project emissions reductions of 1.094 $MtCO_2$. The rationale for the choice of replication factor is given in Annex 7.7. The top-down approach gives indirect emissions reductions equal to 4.38 $MtCO_2$, and an abatement cost of ~0.81 US$GEF/$tCO_2$.

Bottom-up approach

The 10-year emissions reduction potential has been calculated as 26.7 $MtCO_2$. In order to be conservative, a weak causality factor of 20% has been applied to give indirect emissions reductions of 5.34$MtCO_2$. This equates to an abatement cost of approximately 0.67 US$GEF/$tCO_2$. As discussed in Annex 7.7 of the Project Document, the bottom-up approach, though being conservative, gives a more realistic representation of indirect emission reductions than the top-down approach.

The project results framework includes indicators to measure the project's contribution in these areas. These emission reductions will be clearly recorded and reported to the GEF Secretariat via the established monitoring and evaluation channels. The strong focus of the project on MRV will facilitate this task.

B.3. Explain how cost-effectiveness is reflected in the project design:

The proposed project is very cost-effective as it will utilise US$ 3,552,968 of GEF funds to leverage US$ 65,382,640 of co-financing (a co-financing ratio of over 18). In the absence of the UNDP-implemented, GEF-financed project, the baseline projects (Tozeur PV plant and Gabes wind farm) would be built but not according to best practices and with greatly reduced potential for replicability and efficient performance. The cost-effectiveness of the project is reflected in its very low direct GHG abatement cost of around 8 US$GEF/$tCO_2$.

The GEF financing for Outcome 1 will consist of grants for technical assistance, which will address the institutional and policy frameworks that are required to implement the TSP. It seeks to establish high-level political support and coordination mechanisms that will be invaluable for advocating for, and coordinating, mitigation actions across several sectors. The high-level Inter-Ministerial Committee that will be established will also oversee the restructured Energy Transition Fund that will be established under Component 2. Further, system dynamics modelling (SDM) will be used to study the cross-sectoral impacts of the TSP, including scenario analysis of the cost-effectiveness of financial and economic instruments to promote renewable energy technologies. Calculation of emission reductions is only one of the expected outputs of the SDM. The SDM will be coordinated with, and will draw heavily from, the forthcoming Third National Communication to the UNFCCC and future BURs. This modelling will be used as an evidence-based approach for allocating Government funds and seeking external funding for the TSP, which is expected to require investment of the order of €5-6 billion. Further, the DREI analyses that are presented in Section 1.6 and Annex 7.3 of the Project Document will be further developed to propose the most comprehensive and optimal (from cost-benefit and cost-effectiveness perspectives) combination of policy and financial de-risking instruments to minimise the risks to private investments. DREI analysis will be used to develop the investment components of the technology-specific action plans for operationalising the TSP NAMA. Also, the stakeholder mapping will be developed in order to provide a road map for the coordination of stakeholder interventions in supporting the implementation of the TSP NAMA.

The GEF financing for Outcome 2 will consist of grants for technical assistance, which will seeks to establish the necessary conditions (technical, information and regulatory) to leverage financing to support a NAMA in the energy sector – i.e. the TSP NAMA. Prior to being able to attract funding through the restructured Energy Transition Fund

to support the implementation of NAMAs, the country must first demonstrate that a thorough and robust methodological approach has been used to develop NAMAs. Minimum standards for NAMA design (e.g. relating to robust MRV systems and greenhouse gas emission reduction estimation methodologies) will be developed and enforced by the DNA. A Technology Action Plan (TAP) will be developed for each of the three technologies proposed in the TSP (i.e. PV, wind and CSP). Each TAP will detail the means and measures for barrier removal, institutional and capacity development requirements, GHG inventory and MRV structures and processes, and a full description of the geographical location of proposed projects pertaining to that technology based on the TPBM discussed in Section 2.2 (under Component 2) and in Annex 7.6 of the Project Document. Each TAP will carry out a detailed investment analysis based on the tools and methodologies developed under Components 1 and 2. While the restructured ETF will initially focus exclusively on catalysing financing for implementation of the TSP, it is not excluded that the restructured ETF could in the future expand its scope to cover other NAMAs in the energy sector (e.g. buildings, transport, etc.).[9]

The development and implementation of the proposed legal framework include: (1) a Public-Private Partnership Act, (2) a grid code for renewable energies, and (3) an Independent Energy Regulator (IER) to promote private investment to support implementation of the TSP NAMA. The DREI analyses in Section 1.6 and Annex 7.3 of the Project Document shows that overcoming barriers using public de-risking instruments such as a grid code and IER have significant private investment and public savings ratios – i.e. significant cost-effectiveness – compared to the use of compensation in the form of, for example, a feed-in tariff to make renewable electricity cost-competitive with electricity generated from gas. The cost-effectiveness of public de-risking instruments is discussed in Section 2.2 (under Component 2) and Annex 7.6 of the Project Document. An interesting conclusion of the DREI analysis (Section 1.6 and Annex 7.3 of the Project Document) is that, once de-risking instruments have been put in place, there may not be any need for additional financial incentives (such as a premium payment in the form of a feed-in tariff) for wind energy.

A significant proportion (~52%) of the GEF funding will be allocated as incremental investment in the two baseline projects (Component 3) in order to enhance their performance in terms of clean electricity output that is compatible with grid stability. In the baseline projects, the voltage fluctuations in the national grid are not taken into account at sub-stations where renewable electricity is injected into the network. The mismatch between voltage generated by the two baseline projects and the grid voltage will lead to losses and sub-optimal performance of the PV and wind power plants. As part of the investment component, the UNDP-implemented, GEF-financed project will support the installation of interface electronics to match the voltage of renewable electricity with that of the national grid. This will be applied to both baseline projects and, once demonstrated for its effectiveness, interface electronics will be applicable to future RE projects covered in the TSP NAMA technology action plans. The performance of the PV plant at Tozeur will be enhanced for operation in a desert environment by the application of anti-abrasion coatings or similar desert-proofing technology.

In addition to the above, the cost effectiveness of the project stems from its innovation, sustainability, replicability, and the support it lends to the development prerogatives of Tunisia. These are discussed in Sections 1.3.2 and 2.7 of the Project Document.

Innovation

The innovativeness of the project stems from migrating from a conventional, project-based approach to a sector-wide transformational approach that will also include the testing and implementation of novel policy instruments to scale-up the diffusion of renewable energy technologies. It is reiterated here that only one NAMA is being proposed for the entire Tunisian Solar Plan.

Sustainability

The main barrier to sustainability of the TSP is the ability to attract sufficient private-sector and international funding. The methodological and evidence-based approach promoted by the UNDP-implemented, GEF-financed project, complemented by the establishment of necessary institutional and enabling conditions, will be instrumental in leveraging private and international funding to support the implementation of the TSP. Further, the project

[9] This is a conclusion that was reached during the project preparation validation workshop that took place on 4 April 2014 in Tunis.

originates from the Government of Tunisia's willingness to establish long-term climate change mitigation targets, placing it in a stable policy context that strongly favours its sustainable development. By linking GHG reduction opportunities and national development priorities, the TSP NAMA can serve as a template for other NAMA activities in the energy sector, as detailed in Annex 7.1 of the Project Document.

Replicability

The project is designed to establish a sustainable framework for energy sector NAMA design and implementation. This is intended to trigger the process of implementing NAMA activities in the country and to foster the replication of such activities. The project can expect replication at the following three levels (please see pp 60-61 of the Project Document for details), including: (1) *baseline project implementation* – The project will facilitate the successful implementation of two baseline projects that form part of the TSP NAMA. These TSP NAMA projects will have a lifespan that extends beyond the duration of the UNDP-implemented, GEF-financed project, and these projects will have catalytic effects as first-of-their-kind in Tunisia; (2) *additional TSP NAMA projects* – By developing three technology-specific action plans (TAPs), including investment plans, and by developing an optimal combination of cost-effective policy and financial de-risking instruments, it is expected that the private investments will be catalysed effectively to implement the TSP beyond the lifetime of the project; and (3) *definition of new NAMAs in the energy sector* – The project aims to develop a NAMA planning framework that allows for the development of new NAMA activities in the energy sector. The voluntary targets established by the Government of Tunisia for the energy sector are ambitious and require significant changes within the sector. The establishment of a well-defined institutional set-up to prioritise actions and design NAMAs is essential to strengthen the country's efforts to achieve its targets.

Besides these NAMA-related possibilities, replication will also be ensured by capitalising or leap-frogging on the outputs and outcomes of the GEF-financed activities described in Section A.7 (page 8 above). Of particular relevance are the outputs and outcomes of the Private Sector Led Development of On Grid Wind Power in Tunisia and Tunisia's First Biennial Update Report projects.

Replication and sustainability beyond the lifetime of the project will be ensured because it supports the medium-to-long term development policies and strategies of Tunisia. More details are given in Section 1.3.2 of the Project Document. Some of these policies and strategies (including relevant national reports) are: (i) direct support to the **Tunisian Solar Plan** that is the overaching strategy and plan to reach a 30% renewable energy target by 2030, with the broad objective of delivering sector-scale emission reductions that would be consistent with the NAMA approach; (ii) In 2012, Tunisia developed its **National Climate Change Strategy**. This outlines, among other elements, Tunisia's approach to climate change mitigation and adaptation under three different climate change scenarios and outcomes of international negotiations. The NCCS also highlights the need to develop a framework to bring more coherence to the multiple interventions in climate change taking place in Tunisia; (iii) Tunisia conducted a **National Capacity Self-Assessment** for the three Conventions through a GEF-UNDP project. The NCSA covered the: status of regulatory and institutional frameworks, national communications, a study on vulnerability and adaptation to climate change and potential sectoral GHG emission reduction projects. The NCSA highlighted the critical role that renewable energy can play in improving Tunisia's energy security and reducing its GHG emissions, and the importance of institutional strengthening and coordination for maximizing the impacts of mitigation actions; (iv) Tunisia submitted its **Initial National Communication** in 2001 and has recently finalised its **Second National Communication**. The GEF project is fully aligned with the SNC, notably with regard to its support to wind and solar energy, its technical support to NAMAs, and its emphasis on capacity development and institutional strengthening; (v) a **Low Emission Development Strategy** has being developed for Tunisia with the support of UNDP, and it is aligned with the TSP. Financial resources are being mobilised for its implementation. The Strategy will focus on the following aspects of low-carbon development: (1) the definition of strategic objectives; (2) institutional structures required; (3) national dialogues; and (4) awareness raising; (vi) with the technical assistance of UNDP, ANME has developed a **NAMA Strategy for the Energy Sector** consisting of ten components for NAMA preparedness. These components are: (1) institutional structures, (2) identification of priority NAMAs, (3) identification of sustainable development criteria, (4) development of priority NAMAs, (5) establish MRV systems for priority NAMAs, (6) develop a NAMA portfolio, (7) awareness raising and sensitization, (8) capacity building, (9) sub-regional NAMA, and (10) monitoring and evaluation of the strategy. The GEF project will essentially flesh out and operationalize this NAMA Strategy for the Tunisian Solar Plan; and (vii) the initiatives supported by the

German Federal Ministry for the Environment, Nature Conservation, Building & Nuclear Safety (BMU), the German Federal Ministry for Economic Cooperation and Development (implemented by the German agency GIZ) and World Bank are discussed in Section 1.3.2 of the Project Document.

C. DESCRIBE THE BUDGETED M &E PLAN:

The project will be monitored through the following M&E activities.

Project Start: A Project Inception Workshop will be held within the first 2 months of project start with those who were assigned roles in the project organisation structure, the UNDP Country Office, as well as the coordinator of the UNDP and relevant stakeholders of the project including public, private and civil society organisations. The Inception Workshop is crucial to building ownership for the project results, to generate agreements related to the objectives of the project and to plan the first year annual work plan.

The Inception Workshop will address a number of key issues including:

1. Assisting all partners to fully understand their roles and responsibilities in the project context and take ownership of the process. Discuss the roles, support services and complementary responsibilities of UNDP and the PSC vis-à-vis the PMU. Discuss the roles, functions and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for the PSC and project staff will be validated.
2. Based on the validated project results logical framework, the detailed first year work plan will be finalised. This process will help review and agree on the indicators, targets and their means of verification, and re-check assumptions and risks.
3. Providing a detailed overview of the reporting, monitoring and evaluation (M&E) requirements. The Monitoring and Evaluation work plan and budget should be agreed on and scheduled.
4. Explaining and elaborating on the financial reporting procedures and obligations, as well as arrangements for an annual audit, if required.
5. Planning and scheduling Project Steering Committee meetings. Roles and responsibilities of all project organisation structures should be clarified and the meetings planned according to the milestones defined in the work plan during the first quarter of the project. The first Project Steering Committee meeting should be held within the first 6 months following the inception workshop.

An Inception Workshop report will be drafted and shared with the participants. This document will serve as a key reference document and as a way to formalise various agreements and plans agreed on during the meeting.

Quarterly: The Project Manager will report progress made using the reporting format provided by UNDP. Based on the initial risk analysis submitted, the risk log will be regularly updated. Risks become critical when the impact and probability are high. Note that for UNDP-implemented, GEF-financed projects, all financial risks associated with the financial instruments proposed as part of the project are automatically classified as critical on the basis of their innovative nature (high impact and uncertainty due to no previous experience justifies classification as critical).

The UNDP Implementation Officer will hold quarterly meetings with the PMU, or more frequently if necessary. This will allow the parties to conduct periodic assessments and solve problems related to the project in a timely manner to ensure smooth implementation of project activities.

Annually: The annual Project Review/Project Implementation Reports (APR/PIRs) will be the responsibility of the UNDP Implementation Officer with support from the PMU. This report is prepared to monitor progress made since project start, especially for the previous reporting period. The APR/PIR combines both UNDP and GEF reporting requirements.

The APR/PIR includes, but is not limited to, reporting on the following:

- Progress made toward project objective and project outcomes – each with indicators, baseline data and end-of-project targets (cumulative)

- Project outputs delivered per project outcome (annual)
- Lessons-learned/good practice
- Annual Work Plan and other expenditure reports
- Risk and adaptive management

The PMU will develop a detailed programme of monitoring and will review meetings, consultations with partners who will implement the project and relevant stakeholders that have been incorporated into the inception workshop report. The schedule will include: (i) a tentative agenda for meetings of the Project Steering Committee and other relevant advisory and/or coordination mechanisms if appropriate, and (ii) activities related to M & E of the project.

Day-to-day monitoring of the progress of project implementation will be the responsibility of both the Project Manager and UNDP Implementation Officer, based on the annual work plan and its indicators. The Project Manager will report to the UNDP Implementation Officer any delays or difficulties that take place in the project development, for the adoption of corrective measures in time and support or appropriate remedial actions.

Mid-Term of Project Cycle: The project will undergo a Mid-Term Review by an independent consultant at the mid-point of project implementation (July 2017). The Mid-Term Review will determine progress being made toward the achievement of outcomes, and will identify course corrections if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; it will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. The findings from this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organisation and timing of the Mid-Term Review will be decided after consultation between the parties regarding the project document.

A GEF Climate Change Mitigation Tracking Tool will be completed at the mid-term of the project.

End of Project: A Final Evaluation Report will be prepared by an independent evaluator during a three-month period prior to the final Project Steering Committee meeting. The final evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the Mid-Term Review, if any such correction takes place). The final evaluation will look at the impacts and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals.

During the last three months, the PMU will prepare the Project Terminal Report. This comprehensive report will summarise the results achieved (objectives, outcomes, outputs), lessons-learned, problems met and areas where results may not have been achieved. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the project's results.

A GEF Climate Change Mitigation Tracking Tool will be completed at the end of the project.

Audit Clause: The audit will be conducted in accordance with UNDP financial rules and regulations and applicable audit policies on UNDP projects.

The M&E work plan and budget are summarised in the table below.

M&E work plan and Budget

Type of M&E activity	Responsible Parties	Budget $US *Excluding project team staff time*	Time frame
Inception Workshop and Report	Project Manager, PSC, UNDP Tunisia, UNDP-GEF	Indicative cost: $5,000	Within first two months of project start up
Measurement of Means of Verification of project results.	UNDP Tunisia / Project Manager & M&E Expert	None	Start, mid- and end of project (during evaluation cycle) and annually when required
Measurement of Means of Verification for Project Progress on output and implementation	Oversight by Project Manager Project team	To be determined as part of the Annual Work Plan's preparation.	Annually, prior to ARR/PIR and the definition of annual work plans
ARR/PIR	Project Manager and team UNDP Tunisia, UNDP-GEF	None	Annually
Periodic status / progress reports	Project Manager and team (PMU)	None	Quarterly
Mid-Term Review	Project Manager and team (PMU) UNDP Tunisia, UNDP-GEF External Consultants (i.e. review team)	Indicative cost: $10,400	At the mid-point of project implementation
Final Evaluation	Project Manager and team (PMU) UNDP Tunisia, UNDP-GEF External Consultants (i.e. evaluation team)	Indicative cost: $18,800	At least three months before the end of project implementation
Project Terminal Report	Project Manager and team (PMU) UNDP Tunisia External Consultants	None	At least three months before the end of the project
Audit	UNDP Tunisia Project Manager and team (PMU)	Indicative cost per year: $3,500 for a total of $17,500 (for 5 years)	Yearly
Visits to field sites	UNDP Tunisia Government representatives (PSC)	For UNDP-implemented, GEF-financed projects, paid from IA fees and operational budget	Yearly
TOTAL indicative COST Excluding project team staff time and UNDP staff and travel expenses		**$US 51,700**	

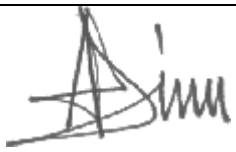
PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT(S) ON BEHALF OF THE GOVERNME
(Please attach the Operational Focal Point endorsement letter(s) with this form. For SGP, use this OFP enc letter).

NAME	POSITION	MINISTRY	DATE *(MM/*
Sabria Bnouni Ben Ammar	Director of International Cooperation and Partnership; GEF OFP	**MINISTRY OF EQUIPMENT, LAND PLANNING AND SUSTAINABLE DEVELOPMENT**	03/05/2013

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and GEF/LDCF/SCCF/NPIF criteria for CEO endorsement/approval of project.

Agency Coordinator, Agency Name	Signature	Date *(Month, day, year)*	Project Contact Person	Telephone	Email Ad
Adriana Dinu UNDP/ GEF Executive Coordinator and Director a.i.		September 30, 2014	Robert Kelly Regional Technical Advisor EITT	+263 4884 580	robert.kelly@

T **RESULTS FRAMEWORK** (either copy and paste here the framework from the Agency document, or provide reference to the ment where the framework could be found).

bute to achieving the following Country Programme Outcome as defined in CPD: Outcome 3: By 2019, the State has put in nd socially-equitable development model that is inclusive, sustainable and resilient, and generating wealth and jobs; Outcome 4: holders generate efficiently and use optimally, sustainably and inclusively the resources in regions.
Outcome Indicators: Number of regional development plans integrating region-specific potentials and environmental dimensions; ble the reinforced autonomy of regions with financial resources and the necessary human resources
y Environment and Sustainable Development Key Result Area (same as that on the cover page, circle one): Sustainable
Area Objective: GEF-5 FA Objective: #3 (CCM-3): "Promote Investment in Renewable Energy Technologies"

icators	**Baseline**	**Targets End of Project**	**Source of verification**	**Risks and Assumptions**
- A NAMA developed for the TSP - Quantity of renewable electricity generated by on-grid baseline projects (MWh/year) - Quantity of direct GHG emissions resulting from the baseline projects and TSP NAMA (tCO_2/year)	- No NAMA for the energy sector - No MRV system for monitoring GHG emission reductions in the energy sector - Proposed Gabes and Tozeur RE plants become operational but with deficiencies (e.g. PV plant not designed	- A NAMA developed for the TSP and submitted for registration with the UNFCCC NAMA Registry - 16.9 GWh/yr is generated by 10 MW PV plant at Tozeur; and 86.4 GWh/yr is generated by 24 MW wind farm at Gabes - Total direct	- Project reports (Quarterly, Annual, PIR, MTE, TE) - Minutes of PSC - UNFCCC NAMA Registry - Energy sector GHG inventory report (First BUR and National Inventory Reports) - MRV mechanism or technology-specific MRV mechanisms	- The Government of Tunisia maintains its commitment to its voluntary GHG abatement initiatives through NAMAs, especially in the energy sector - Detailed sectoral inventory is established and operational in collaboration with GIZ - MRV mechanism(s) developed in collaboration with the PMR initiative

Objective/ Outcomes	Indicators	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
		for desert conditions; weak interface between RE plants and the national grid)	emission reductions of 218,900 tonnes CO_{2e} between 2016 and 2019		- Implementation barriers (regulatory, financial, technical, technological) have been reduced or overcome
Outcome 1: The enabling conditions, methodologies and tools are developed for de-risking the national policy environment for implementing the Tunisian Solar Plan through a TSP NAMA	- Number of committees established and operational - Energy sector system dynamics model developed and implemented - Number of policy and financial de-risking instruments designed using DREI analysis and implemented	- No high-level Inter-Ministerial TSP NAMA Committee - No cross-sectoral modelling tool exists to investigate the sustainable development (economic, social and environmental) dividends of the energy sector - No methodology is used to quantify risks	- A high-level Inter-Ministerial TSP NAMA Committee is established - A system dynamics model is developed and implemented for the energy sector - At least 4 policy and financial de-risking instruments have been developed using DREI analysis based	- Project reports (Quarterly, Annual, PIR, MTE, TE) - Reports on SDM for energy sector - DREI reports	- The Government of Tunisia maintains its commitment to its voluntary GHG abatement initiatives through NAMAs, especially in the energy sector - Continued commitment of the GoT to use an evidence-based approach to advocate for the sustainable development benefits of the TSP NAMA

Objective/ Outcomes	Indicators	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
		that hinder investments in RE, and to develop policy and financial de-risking instruments to promote large-scale private investments.	on work initiated in the development of the project document.		

Objective/ Outcomes	Indicators	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
Outcome 2: A coherent climate finance framework is established for the development of the TSP NAMA to catalyse the transformational capacity of the TSP to generate large emission reductions.	- Number of national guidelines - Number of technical codes - Number of regulations - Number of financial instruments to capitalise the Energy Transition Fund	- Guidelines and SD criteria exist for CDM projects but not for NAMAs - Low institutional capacity of MELPSD to act as the coordinating body and quality assurer for NAMAs in Tunisia - PPPs for developing RE projects do not exist - No grid code for RES is available publicly to project developers - No energy regulator exists in Tunisia - FNME restructured into the ETF in January 2014 (Articles 67 and 68 of the Finance	- A set of guidelines and design criteria is developed for all NAMAs by the end of Year 1; a set of social and environmental safeguard guidelines is developed for all utility-scale RE by the middle of Year 2 based on international standards - A grid code is approved by stakeholders and made publicly available by the end of Year 2 - Modalities for PPPs are established in regulations, and the establishment of an Independent Energy Regulator (IER) is	- Report on standardised baseline tool development and user manual - Project reports (Quarterly, Annual, PIR, MTE, TE) - Minutes of PSC - Legislation/decrees proclaimed - Grid code - IER charter or similar foundational document - 3 TSP NAMA technology action plans - Report detailing the design and establishment of the territorial performance-based mechanism - Report on the design and operationalisation of the environmental and social safeguard guidelines - Lessons-learned report	- GoT maintains its commitment to monitor, report and verify its voluntary NAMA initiatives - GoT supports the facilitation of private-sector investment in the energy sector - Institutional support of STEG is obtained - GoT support for the establishment and operationalisation of an IER - ANME maintains its commitment to restructure the ETF - GoT maintains its commitment to the sustainable development of Regions through the TSP NAMA

Objective/ Outcomes	Indicators	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
		Law 2014). Diversified sources of capitalisation not sufficient to support the implementation of the TSP NAMA - No social and environmental safeguards are required under current legislation for projects with installed capacity below 300 MW	supported - The ETF is supported with at least 3 new financial instruments		

Objective/ Outcomes	Indicators	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
Outcome 3: The TSP is operationalised by demonstrating a proof-of-concept energy NAMA with quantified GHG emission reductions.	- Emission reductions from grid-connected wind and PV power - Number of households benefiting from electricity generated by wind and PV plants (households/year)[10]	- Baseline projects implemented with identified deficiencies - No MRV protocol / system for TSP NAMA	- 8,954 tCO_{2e}/year from 10 MW PV plant at Tozeur (35,815 tCO_{2e} between 2016 and 2019) - 45,775 tCO_{2e}/year from 24 MW PV plant at Gabes (183,100 tCO_{2e} between 2016 and 2019) Number of households benefiting from renewable energy by end of project:[11] - 11,544 from PV; - 50,016 from wind	Project reports (Annual, PIR, MTE, TE) and minutes of PSC	- Baseline projects do not suffer major alterations in scope or financing - Grid-connected, utility-scale private sector projects are supported through forthcoming RE Law - Standardised baseline for national grid has been developed - National MRV system is in place

[10] The targets are based on average electricity consumption of approximately 1,464 kWh/household in 2011 calculated using the following data: (1) population = 10,673,800 persons - http://www.ins.nat.tn/indexen.php; (2) average number of persons per household = 4.28 - http://www.britishcouncil.org/learning-skills-for-employability-tunisian-country-income-and-wealth.htm; and (3) electricity consumed by the residential sector ~ 3,650 GWh (ANME, 2013).

[11] These targets assume that all electricity is fed into the national grid as opposed to self-consumption.

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

GEFSEC Review Comments	Response
Please address the following items by the CEO Endorsement stage:	
a) detailed design of financing mechanism under the national climate change fund to ensure sustainability and replicability after the GEF project;	During the PPG stage, and based on the views of stakeholders (and in particular the implementing institution, ANME), the output of setting up a national climate change fund was changed into one of supporting the Energy Transition Fund (ETF) to further diversify its sources of capitalisation (e.g. concessional loans, green credit lines, fiscal incentives, donor contributions, a carbon tax, and climate finance) and its strategic management. The implementation of the TSP NAMA will require substantial investments (€5-6 billion, and predominantly private financing). The preliminary DREI analysis shown in Section 1.6 and Annex 7.3 of the Project Document has shown that public de-risking instruments of the order of €432 million and an additional incentive of €296 million for PV will need to be spent to catalyse approximately €2.8 billion of private investment in wind energy and PV (i.e. excluding investments in CSP). Such sums of spending in terms of public de-risking instruments and additional incentives are beyond the means of climate/carbon finance. So, for the sustainability of the ETF beyond the lifetime of the UNDP-implemented, GEF-financed project, other means of capitalisation will be explored and developed by the project. This is also in line with the recent restructuring of the ETF to make it more financially sustainable, as well as the intention of ANME to diversify the sources of capitalisation of the ETF (please see pg. 19 of the Project Document).
b) specific activities under priority NAMAs and a series of milestones for associated activities developed during the PPG stage;	The UNDP-implemented, GEF-financed project will support the implementation of the Tunisian Solar Plan (TSP) as one NAMA in the energy sector. As discussed in Section 1.2.4 of the Project Document, the TSP aims to achieve a total renewable energy penetration target of 30% of the electricity generation mix by 2030. The technologies considered are wind, solar photovoltaic (PV) and concentrated solar power (CSP), with electricity generation contributions from each of 15%, 10% and 5% respectively, while noting the CSP component will not be implemented before 2020. Only PV and wind energy are therefore expected to be implemented during the lifetime of the UNDP-implemented, GEF-financed project, while noting that many activities proposed to remove barriers and reduce investments risks for these two technologies will also be applicable to CSP.

	The project has been designed so that the principal NAMA-related activities have been front-loaded. Some of these activities are: • A high-level Inter-Ministerial Committee (Output 1.1), and a Secretariat (Output 1.2) are operationalised to carry out cross-sectoral coordination of the TSP NAMA – Year 1; • NAMA eligibility criteria (Output 2.1) are developed – Year 1; • Three Technology Action Plans (Output 2.5), including technology-specific MRV systems, developed to operationalise TSP NAMA – Year 1 (wind and PV) and Year 2 (CSP). Will be updated on a needs basis during the lifetime of the project; • System dynamics and DREI Modelling (Output 1.3) to establish the cost-effectiveness of public instruments to generate sustainable development benefits, including GHG emission reductions: Year 1 and Year 2 (updated during project lifetime if necessary); • Guidelines for the environmental and social safeguards of RE projects developed (Output 2.8) – Year 1; • Standardised baseline to calculate emission reductions (Output 2.3) from grid-connected renewable electricity – Year 1 (and updated annually); • Grid code adopted (Output 2.4) – middle of Year 2; • Supporting the operationalisation of an Independent Energy Regulator (Output 2.4) – Year 1-3; • A Territorial Performance-Based Mechanism designed and implemented (Output 2.7) – Year 2 & 3 (with updates during the project lifetime); • Supporting the Energy Transition Fund to diversify its sources of capitalisation – Year 1-5; • Enhancement of baseline projects (Output 3.1) – Year 1 & 2 (and follow ups during lifetime of project); • Lessons-learned report (Output 2.9) – Year 5 Please see the Project Framework (Part 1 – B) and the Results Framework shown in Annex A of the CEO Endorsement Request for more details.
c) standardised MRV systems for various types of identified NAMAs;	Under Component 2 of the project (please see Annex A above), Output 2.3 proposes to establish a standardised baseline for calculating emission reductions from grid-connected renewable energy through development of a tool for annually updating the emission factor of the national electricity system, while Output 2.5 will develop three comprehensive sectoral NAMA action plans for PV, wind and CSP (pg. 51 in Project Document). Each Technology Action Plan (TAP) will

	detail the appropriate MRV structures and processes (pg. 52 in Project Document).
d) sound and robust methodologies and assumptions for GHG emissions estimation, especially for NAMA demonstration projects to avoid duplication;	The development of a standardised baseline for calculating emission reductions from grid-connected renewable energy through development of a tool for annually updating the emission factor of the national electricity system will be carried out to provide a sound and robust approach for calculating GHG emissions reductions. An approach based on a corresponding CDM tool is shown in Annex 7.7 of the Project Document. Please also see pg. 58 of the Project Document (direct GHG emission reductions).
e) references to and coordination with the latest national reports and other initiatives in Tunisia to substantiate results and assuring future replications.	These are explicitly referenced in Section 1.3.2 of the Project Document.

GEF Council Review Comments	Response
a) Tunisia is already working on defining a FiT for renewable energies. There will be a supporting mechanism for renewable energy technologies which would de facto render the performance-based emission reduction payment system as proposed by the implementing agency obsolete. This aspect is very critical and requires evaluation of the incremental cost reasoning.	This concern has been duly taken into consideration during the design of the Project Document. It is indeed noted that several studies (including through the technical assistance of GIZ) have developed FiT schemes for RES in Tunisia. Based on broad stakeholder discussions, including in-depth discussions with the various GIZ project teams in Tunis, and informed by the findings of the DREI analysis (UNDP's investment de-risking methodology), a territorial performance-based mechanism (TPBM) has been proposed as an evolutionary step to this pre-existing work on FiT design . The TPBM is discussed on pages 52 and 53, and Annex 7.6, of the Project Document, and is justified by the following elements while taking note of the prior studies that have been carried out on FiTs in Tunisia. • The TPBM will be based on delivering sustainable development benefits to the regions through the promotion of specific (to be determined by geospatial analysis during project implementation) installed capacities of the three TSP RE technologies – i.e. wind, solar PV and CSP. It will include region-specific packages consisting of a combination of public de-risking instruments and a financial incentive (where applicable). The incentive, which is here termed a 'proxy FiT' to reflect the fact that it will operate like a classic FiT but will do so AFTER policy de-risking (thereby lowering the financial premium – if any – that is required to incentivise RE IPP investment), will be based on the difference in LCOEs between the de-

	risked RE-generated electricity and the baseline (which is CCGT electricity in Section 1.6 and Annex 7.3, but could also be another baseline fuel, such as coal in the future). • The incentive in the TPBM is called a 'proxy FiT' to distinguish it from the full compensation (either through a FiT or negotiated purchase price of electricity in a PPA) that would be required to make RES cost-competitive with the baseline electricity as shown in Figure 15 for wind energy and Figure 7.3.1 for PV. The DREI analysis shown in Section 1.6 and Annex 7.3 clearly show that any incremental incentive – i.e. 'proxy FiT' – that will be required to support RES once public instruments are in place in the form of policy and financial de-risking instruments is significantly more cost-effective compared to the situation when full compensation is required in the form of a 'full' FiT/PPA. The preliminary DREI analysis carried out during the design of this project shows that a 'proxy FiT' may not even be necessary in the case of wind energy. The de-risking approach proposed in this GEF-funded, UNDP-implemented project rests precisely on the cost-effectiveness of de-risking renewable energy investments through public instruments. • Previous studies on the use of a FiT to promote RES in Tunisia have focused primarily on providing full compensation against the baseline without considering the cost-effectiveness of de-risking public instruments.[12] Further, these studies have focused primarily on the quantity of renewable resources to propose FiTs. While renewable energy resources are certainly an important parameter in determining the financial viability of RE projects, the DREI analyses presented in the Project Document clearly show that there are other barriers that give rise to risks that increase the cost of capital for RE investments in Tunisia. As discussed above, this is in addition to the fact that full compensation in the form of a FiT may not be the most cost-effective means to promote investments in RES. While the preliminary DREI analyses have concentrated on risks at the national level, the TPBM will bring more granularities in DREI analyses during project

[12] For example: ANME. (2013), *Calcul de tarif d'achat du kWh éolien en Tunisie*; and Meister Consultants Group. (2013), *Analyse économique de l'introduction d'un système de tarif d'achat de l'énergie renouvelable en Tunisie*.

	implementation to investigate region-specific risks, and their impacts on investments, through its territorial approach. The 'proxy FiT' approach of the TPBM is fully compatible with planned efforts by GIZ and the Partnership for Market Readiness (PMR) to partially finance premium FiT payments using carbon finance.
b) The coordination with related climate and energy activities is not sufficient. There are manifold activities in the Tunisian energy sector. Among them, are the planned activities by the DKTI and an ongoing activity by ICI on MRV. DKTI envisages supporting the TSP starting from 2014.	No efforts have been spared during the development of the project to maintain close communication channels with all German-related initiatives in the climate and energy sector in Tunisia. All the initiatives and projects that are mentioned in Section 1.3.2 of the Project Document have been fully involved in the project preparation process, including participation in the stakeholder validation workshop and review of the draft Project Document. Much of the technical assistance provided by the Government of Germany is channelled through ANME, which is also the Executing Entity of the UNDP-implemented, GEF-financed project. This has facilitated coordination with all the relevant projects. The synergies and complementarities between the mentioned projects and the UNDP-implemented, GEF-financed project have been accounted for in the ANME co-financing letter, given in Annex 7.5 of the Project Document.
c) Germany observes duplication of envisaged activities and expected results under Component 1.3 (scenario studies). This also applied to experiences for operation of solar PV plants in desert areas where, for example, plants in the USA already have been accumulating experiences for several decades.	The use of system dynamics modelling to investigate the cross-sectoral sustainable development benefits and cost-effectiveness of policy and financial instruments to promote investment in the TSP has been commended by STAP. Multi-stakeholder engagement, especially with ANME, has shown that the modelling will be a welcome evidence-based tool for advocating the multiple benefits of the TSP. Based on these, and having reviewed the modeling work that has been carried out in the context of updating the TSP, there does not seem to be duplication concerning scenario studies. For instance, the effectiveness of public de-risking instruments and their sustainable development benefits (i.e. economic, social and environmental) have not been carried out dynamically in Tunisia to date. STAP has noted that: "Analysis of cross-sectoral impacts of NAMAs as envisaged by conducting systems dynamics modelling to assist Tunisia achieve sustainable development is also commendable." The incremental use of anti-ablation coatings on the PV system at Tozeur has been specifically requested by STEG. Indeed, the idea is to communicate and share best practices for enhancing the performance of PV

	projects in Tunisia as STEG has indicated that these are not considered in the baseline.
d) The proposed system boundaries of the NAMA, in particular the reasons for designing pilot measures pertaining to three technologies (wind, PV, CSP), instead of designing the TSP as one NAMA are unclear. For all technologies it is necessary to determine the incremental cost reasoning (the technologies are already or will become profitable with the planned FiT and the necessity for installing the technologies as described under output 3.1 for grid stabilization is not clear).	This is a very good point that has been clarified during project document preparation in consultation with all stakeholders. The project has now been designed to support one TSP NAMA. The TSP NAMA will be operationalised through three technology-specific action plans that will be developed based on the specific barriers – and hence risks – that the technologies face using DREI analysis during implementation. The granularity of the analysis will be increased during the development of the TPBM as discussed above. Concerning the FiT, DREI analysis has shown that a full FiT is not necessarily a cost-effective means of implementing the TSP at the sectoral scale. Instead, policy de-risking instruments can be deployed to reduce the incremental costs of renewables vis-à-vis the baseline; these reduced incremental costs can then be addressed by what has been termed here a 'proxy FiT' – i.e. a FiT applied to the de-risked environment. The necessity for installing stabilising interface electronics forms part of the grid integration policy de-risking instrument and has been specifically identified by both STEG and Enerciel as requiring GEF support.
e) The US is supportive of this project and its goal of emissions reductions through wider deployment of sustainable power generation.	No response required.
f) The project mentions the existence of fossil fuel subsidies as a barrier of this project and discusses the difficulty in achieving their removal. Final project documentation should include a more thorough discussion of the impact of these barriers to the project's sustainability and ability for replication and upscaling.	This is indeed a crucial issue that has been addressed in Section 1.2.2 and Annex 7.3 on the DREI analysis. It is noted that: • The Government of Tunisia has taken steps to remove and reduce energy subsidies. For instance, cost-reflective electricity tariffs were introduced in 2014 for energy-intensive industries such as the cement sector.[13] Similar electricity subsidy reforms will be extended to other sectors over the next 3-6 years; and • There have been efforts by STEG to reduce subsidies on fuel costs. DREI analysis has noted that the current STEG transfer price is close to the current European spot price. The issue of subsidies can be an area of further research in future applications of this methodology during project implementation.

[13] Government of Tunisia (2014), *Tunisia: Letter of Intent, Memorandum of Economic and Financial Policies, and Technical Memorandum of Understanding*, http://www.imf.org/External/NP/LOI/2014/TUN/041014.pdf - accessed 29 June 2014.

STAP Review Comments	Response
It is important to point out that unless the state subsidies on the fossil fuel energy use are removed, there will be little opportunity for the renewable energy systems to be able to compete with subsidies. Removal of fossil fuel subsidies is a main message coming from the IEA - see http://www.guardian.co.uk/environment/datablog/2012/jan/18/fossil-fuel-subsidy. Therefore, STAP welcomes the reform of fossil fuel subsidies being proposed under Component 1 with the GEF supporting this aspect.	As discussed in the previous table, subsidy reforms are already taking place in Tunisia that will lead to a more level playing field for RES.
The Desertec project is currently facing some difficulties with key partners leaving. The Tunisian Solar Plan aim is to produce 30% of electricity generation mix from renewables by 2030 but it also aims to export 20% of this. Is the TSP relying on the Desertec project for the means to build the transmission lines and undersea cables needed to export the power? If so, given the high costs involved, and uncertainty of when Desertec might proceed or not, it might be worth considering this project to be aimed only at local electricity generation for national use by supporting the wind and solar PV projects as outlined.	This is a pertinent observation that has been taken into account in the development of the project. Indeed, the focus is mainly on implementing the TSP NAMA for domestic purposes. This approach is fully embraced in the DREI analysis that has been carried out in the project design.
STAP wishes to clarify the referenced parameters of the wind speed and capacity factor. The wind project outlined has a 41% capacity factor (24 MW generating 86.4 GWh/yr), which implies very good wind sites with around >9 m/s mean annual wind speed. Is this correct? Or perhaps the 86.4 GWh quoted is for the full 45 MW project, in which case the capacity factor would be 22% with a mean annual wind speed of around 6 m/s which perhaps seems more plausible for this region.	It is clarified that the capacity factor is for the site at Gabes, as determined by the feasibility study conducted for the project developer, Enerciel. The site is indeed endowed with high wind energy resources and a map has been included in the project documentation. Marginal sites in Tunisia correspond to a capacity factor of approximately 30%, and this is the value that has been adopted in the design of the TSP and energy mix studies, as well as the DREI analysis given in Section 1.6 and Annex 7.3 of the project document.
Testing the effectiveness of cooling solar PV arrays is an innovative way of using the GEF funding and is warmly welcomed by STAP.	No response required. Nevertheless, this comment also supports the incrementality of the baseline project and it serves as an additional element to respond to the Government of Germany's comment (c) in the previous table.
It is not clear if the wind power projects will have a low climate sensitivity in the longer term as climate change impacts strengthen. Changes in extreme weather events and air density could be minimal compared with possible changes to the recent seasonal or daily patterns of wind that are possible, but difficult to predict over the life of the wind turbines. STAP suggests considering this risk in the Risks section.	This is noted. Tunisia is now completing its Third National Communication and the outputs of climate modelling will be used to provide an informed answer to the risk of possible changes in daily wind patterns.
Analysis of cross-sectoral impacts of NAMAs as envisaged by conducting systems dynamics	No response required.

modeling to assist Tunisia achieve sustainable development is also commendable.	
The incentive-based funding system to be created is innovative and supported by STAP.	No response required.

ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS[14]

[14] If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue undertake the activities up to one year of project start. No later than one year from start of project implementation, Agencies should report this table to the GEF Secretariat on the completion of PPG activities and the amount spent for the activities.

A. DESCRIBE FINDINGS THAT MIGHT AFFECT THE PROJECT DESIGN OR ANY CONCERNS ON PROJECT IMPLEMENTATION, IF ANY:

There are no specific issues that might affect project implementation. The proposed project has been developed following 3 in-country stakeholder missions and a large number of interviews and meetings, and its design was concluded with a validation workshop**.**

B. PROVIDE DETAILED FUNDING AMOUNT OF THE PPG ACTIVITIES FINANCING STATUS IN THE TABLE BELOW:

As part of the PPG process, two extensive multi-stakeholder consultations were held in Tunis, and meetings were held with the GIZ personnel working on the range of projects covered in Section 1.3.2 of the Project Document. Extensive meetings were also held with the proponents of the two baseline projects (STEG's 10 MW PV project at Tozeur and Enerciel's 24 MW wind energy project at the cement factory in Gabes). An important innovative element of the project development involved the application of UNDP's DREI analysis to identify public de-risking instruments to catalyse private investments to implement the TSP NAMA. One of the key stakeholders that was interviewed in the process was the KfW, which is providing a soft loan to the Government of Tunisia to implement the PV project at Tozeur. Emphasis has been placed on developing the appropriate institutional arrangements, regulatory frameworks and necessary tools and methodologies to set up an actionable TSP NAMA.

PPG GRANT APPROVED AT PIF: $100,000			
PROJECT PREPARATION ACTIVITIES IMPLEMENTED	***GEF/LDCF/SCCF/NPIF AMOUNT ($)***		
	BUDGETED AMOUNT	***AMOUNT SPENT TO DATE***	***AMOUNT COMMITTED***
LOCAL CONSULTANTS	16,811.95	3,200	13,611.95
INTERNATIONAL CONSULTANT	66,000	0	66,000
TRAVEL	6, 289	6, 289	0
MISCELLANEOUS (E.G. WORKSHOP ORGANISATION, OFFICE FACILITIES, PUBLICATION)	10,899.05	2, 424.51	8, 474.54
TOTAL	**100,000**	**11,913.51**	**88,086.49**

ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used**)**

Provide a calendar of expected reflows to the GEF/LDCF/SCCF/NPIF Trust Fund or to your Agency (and/or revolving fund that will be set up)

N/A

ANNEX E: ABBREVIATED SUMMARY OF KEY FINDINGS FROM THE DERISKING (DREI) ANALYSIS

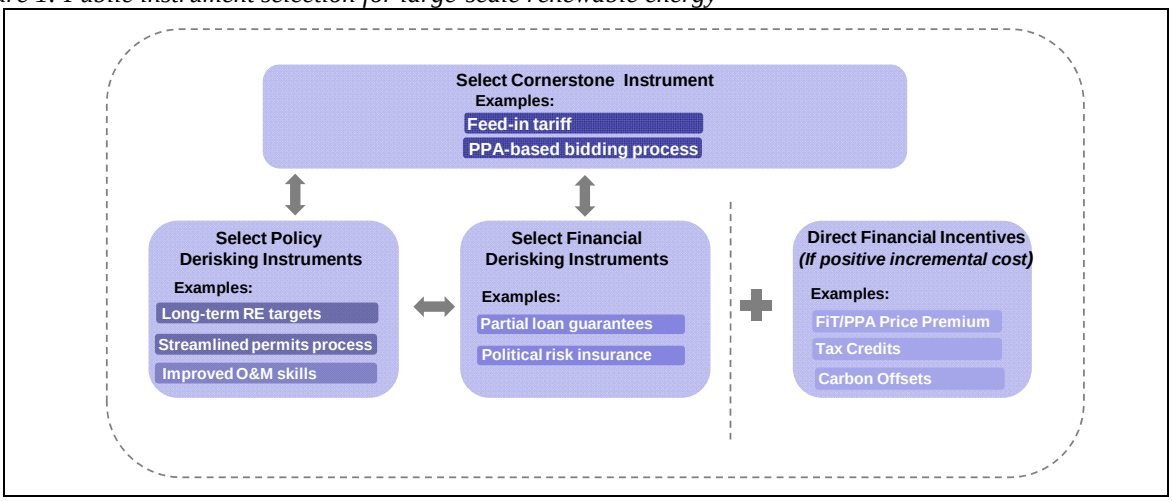
The Derisking Renewable Energy Investment Methodology

In April 2013, UNDP issued the Derisking Renewable Energy Investment report (the "DREI report") (Waissbein *et al*., 2013). The DREI report introduced an innovative methodology (the "DREI methodology"), with an accompanying financial tool in Microsoft Excel, to quantitatively compare different public instruments to promote renewable energy investment.

A key focus of the DREI methodology is on financing costs for renewable energy. While technology costs for renewable energy have fallen dramatically in recent years[15], private sector investors in renewable energy in developing countries still face high financing costs (both for equity and debt). These high financing costs reflect a range of technical, regulatory, financial and informational barriers and their associated investment risks. Investors in early-stage renewable energy markets, such as those of many developing countries, require a high rate of return to compensate for these risks.

In seeking to create an enabled environment for private sector renewable energy investment, policy-makers typically implement a package of public instruments. From a financial perspective, the overall aim for policy-makers in assembling a public instrument package is to achieve a risk/return profile for renewable energy that can cost-effectively attract private-sector capital. Figure 1 below, from the DREI report, identifies the four key components of a public instrument package that can address this risk/return profile.

Figure 1: Public instrument selection for large-scale renewable energy



Source: Derisking Renewable Energy Investment (2013)

The **cornerstone instrument** is the centrepiece of any public instrument package. For large-scale renewable energy, the cornerstone instrument is typically a Feed-in Tariff (FiT) or a tendering process, either of which allows independent power producers (IPPs) to enter into long-term (e.g. 15-20 year) power purchase agreements (PPAs) with grid operators. The cornerstone instrument can then be complemented by three core types of public instruments:

- **Instruments that reduce risk**, by addressing the underlying barriers that are the root causes of investment risks. These instruments utilise policy and programmatic interventions. An example might involve a lack of transparency or uncertainty regarding the technical requirements for renewable energy project developers to

[15] . For example, in the case of solar photovoltaic, module costs have experienced a near 98 percent reduction from 1979 to 2012 (IRENA 2012)

connect to the grid. The implementation of a transparent and well-formulated grid code can address this barrier, reducing risk. The DREI methodology terms this type of instrument "**policy derisking**".

- **Instruments that transfer risk**, shifting risk from the private sector to the public sector. These instruments do not seek to directly address the underlying barrier but, instead, function by transferring investment risks to public actors, such as development banks. These instruments can include public loans and guarantees, political risk insurance and public equity co-investments. For example, the credit-worthiness of a PPA may often be a concern to lenders. A development bank guarantee can provide banks with the security to lend to project developers. The DREI methodology terms this type of instrument "**financial derisking**".

- **Instruments that compensate for risk**, providing a financial incentive to investors in the renewable energy project. When risks cannot be reduced or transferred, residual risks and costs can be compensated for. These instruments can take many forms, including price premiums as part of the electricity tariff (either as part of a PPA or FiT), tax breaks and proceeds from the sale of carbon credits. The DREI methodology calls these types of instruments "**direct financial incentives**".

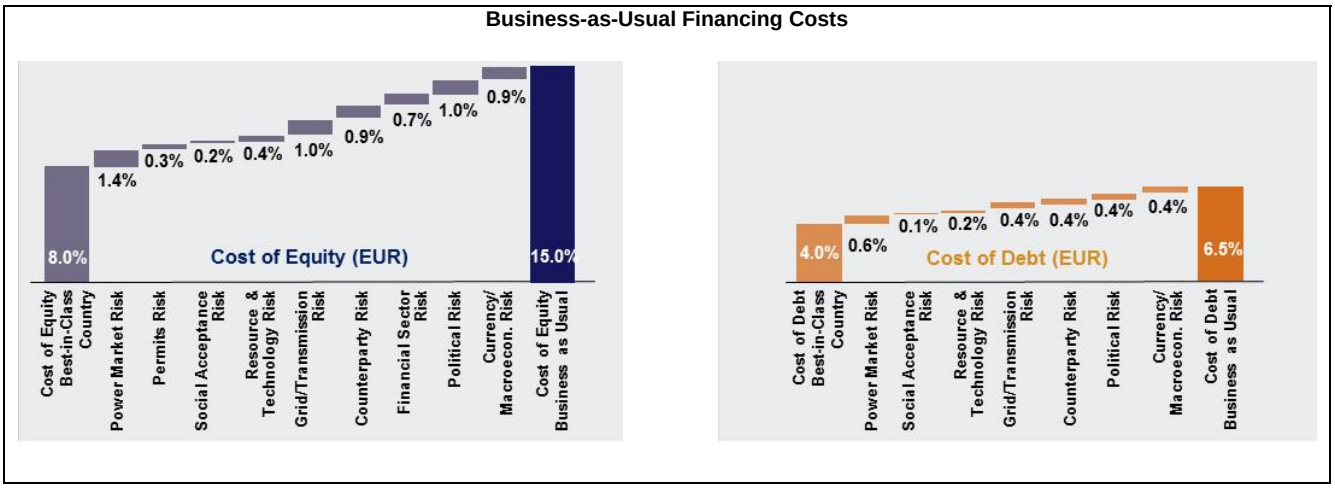
Analysis of the Results

The DREI methodology was used to model the selection of public instruments to attract investment to meet the Tunisian Solar Plan's 2030 targets for wind energy and solar PV.

Risk Environment

The results, shown in Figure 2, show that a range of investment risks currently contribute to the higher financing costs for wind energy and solar PV found in Tunisia. The current cost of equity is estimated at 15.0%, and the cost of debt at 6.5%. The risk category with the largest impact on financing costs is *power market risk*, which relates to accessing power markets and the price paid for renewable energy. Other risk categories with large impacts include grid/transmission risk, counterparty risk, political risk and macroeconomic/currency risk.

Figure 2: Impact of risk categories on financing costs for wind energy and solar PV investments in Tunisia, business-as-usual scenario



Source: interviews with wind energy and solar PV investors and developers; modelling; best-in-class country is assumed as Germany; see Annex C of the DREI Tunisia report for details of assumptions and methodology.

Public Instrument Packages

The modelling uses 2030 targets, based on the Tunisian Solar Plan, for both large-scale wind energy (1,404 MW) and solar PV (736 MW). It then models the implementation of a package of public instruments, containing both policy and financial derisking instruments, to promote investment to achieve these targets. The instruments are selected in order to specifically target the risk categories identified in the financing cost waterfalls. A list of these public derisking instruments is shown in Table 3. For wind energy, the costs until 2030 for policy derisking instruments are estimated as being EUR 8.5 million, and for financial derisking instruments EUR 279.0 million. For solar PV, the policy derisking instruments are estimated as being EUR 4.4 million, and the financial derisking instruments EUR 140.6 million.

Table 3 . Public instrument selection to promote wind energy and solar PV in Tunisia.

Risk Category	Policy Derisking Instruments	Financial Derisking Instruments
Power Market Risk	• Long term targets • Regulatory framework • FIT/PPA tender (standardised PPA) • Independent regulator	NA
Permits Risk	• Streamlined permitting; one-stop shop; recourse mechanism	NA
Social Acceptance Risk	• Awareness raising campaigns • Promote/pilot community-based approaches	NA
Resource & Technology Risk	• Resource assessment • Technology support (solar PV)	NA
Grid/Transmission Risk	• Transparent, up-to-date grid code • Grid management/planning	• Take or pay clause in PPA
Counterparty Risk	• Strengthen utility's management	• Government guarantee of PPA
Financial Sector Risk	• Domestic financial sector reform	• Concessional public loans to IPPs
Political Risk	NA	NA
Currency/Macroeconomic Risk	NA	• Partial indexing of PPA tariffs to foreign currencies

Source: modelling. "NA" indicates "Not Applicable".

Levelised Costs

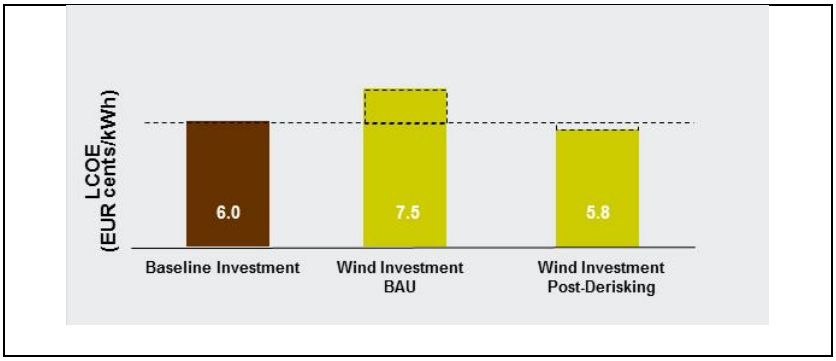
The modelling is performed for two risk environment scenarios; first, a *business-as-usual* scenario, representing the current risk environment (with today's financing costs); and second, a *post-derisking* scenario, after implementing the public instrument packages (resulting in lower financing costs).

Generation costs (the Levelised Cost of Electricity, LCOE) can then be calculated in both scenarios and are shown in Figures 4 and 5 below.

- In the *business-as-usual* scenario, wind energy and solar PV are more expensive than the baseline: i.e. they are more expensive than the technology – combined cycle gas turbines – that Tunisia currently relies on to increase its electricity generation capacity. The baseline generation cost is calculated as being 6.0 EUR cents/kWh. In comparison, wind energy today in Tunisia is estimated at 7.5 EUR cents/kWh, and solar PV at 9.9 EUR cents/kWh.

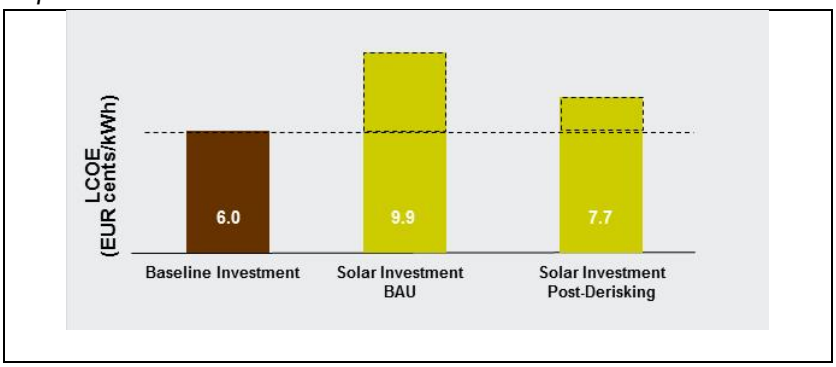
- In the *post-derisking* scenario, the cost of wind energy falls to 5.8 EUR cents/kWh, and the cost of solar PV falls to 7.7 EUR cents/kWh. As such, post-derisking, wind energy becomes competitive with – actually cheaper than – the baseline energy technology. Solar PV remains more expensive than the baseline.

Figure 4: LCOEs for the baseline and wind energy investment in Tunisia



Source: modelling; see Table 4.13 and Annex C of the DREI Tunisia report for details of assumptions and methodology.

Figure 5: LCOEs for the baseline and solar PV investment in Tunisia



Source: modelling; see Table 4.14 and Annex C of the DREI Tunisia report for details of assumptions and methodology.

Evaluation of instruments' effectiveness

The DREI methodology uses four performance metrics to analyse the selected public instrument package, each taking a different perspective: its ability to catalyse investment (leverage ratio); the economic savings generated for society (savings ratio); the resulting electricity price for end-users (affordability); and its efficiency in mitigating greenhouse gas emissions (carbon abatement).

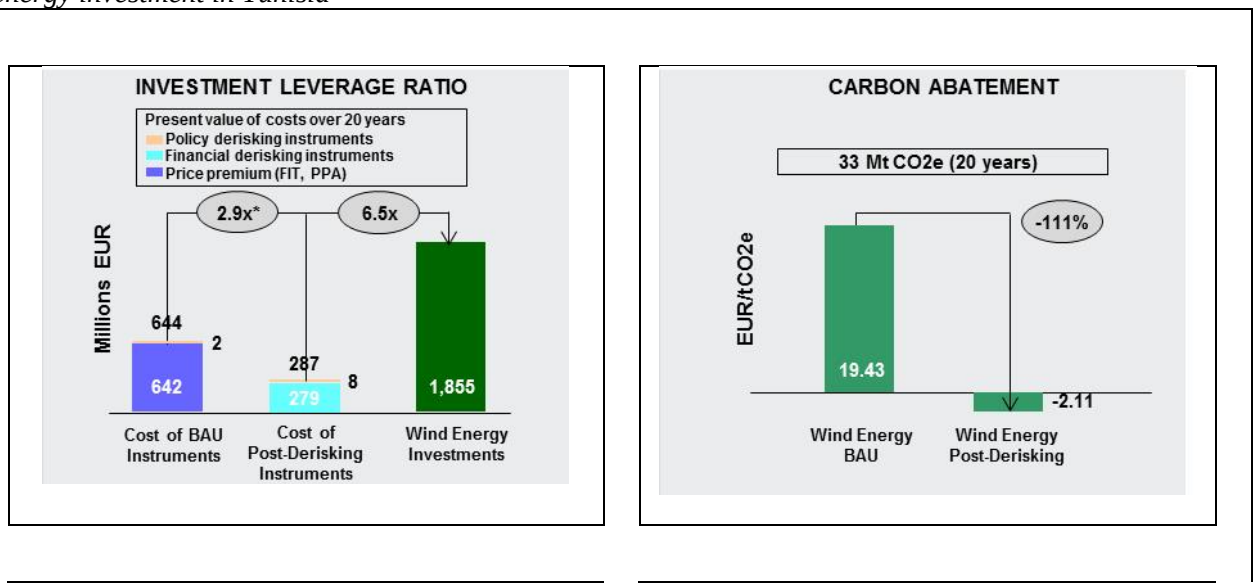
Figure 6 shows the results for the leverage ratio and carbon abatement for wind energy.

- For the leverage ratio, the 2030 target of 1,404 MW in installed wind capacity equates to EUR 1.855 billion in private sector investment. In the BAU scenario, the model estimates that achieving this target will require a price premium over 20 years of EUR 642 million. This results in a leverage ratio (the ratio of public money to investment catalysed) of 2.9 x. In the post-derisking scenario, the model estimates that this same target can be achieved with a package of derisking instruments valued at EUR 287 million. This raises the leverage ratio to 6.5 x, indicating a higher utilisation efficiency for public money.

- For carbon abatement, achieving the 2030 target of 1,404 MW is estimated to result in a total reduction of 33 million tonnes of CO_2 over the lifetime of the wind plants. In the BAU scenario, the abatement cost of the investment in wind energy is EUR 19.43 per tonne of CO_2e. In the post-derisking scenario, this falls to EUR -

2.11 per tonne of CO_2e. This performance metric is helpful in terms of understanding a carbon price that is necessary to promote investment.

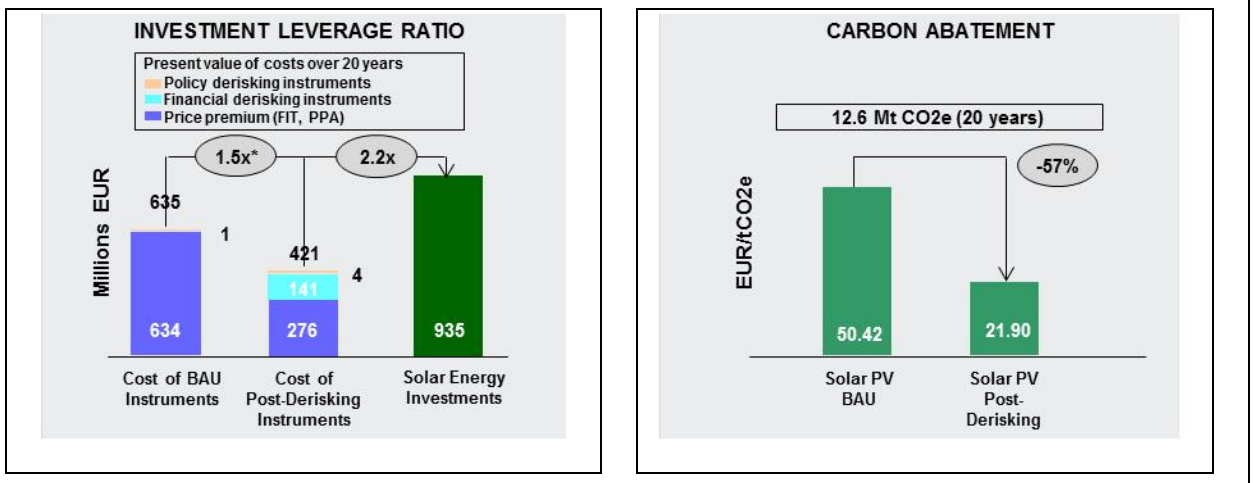
Figure 6: Performance metrics for the selected package of derisking instruments in promoting 1,404 MW of wind energy investment in Tunisia



Source: modelling; see Table 4.13 and Annex C of the DREI Tunisia report for details of assumptions and methodology.
*In the BAU scenario, the full 2030 investment target may not be met.

Figure 7 shows selected results for solar PV in Tunisia, this time with the 2030 target of 736MW of large-scale solar PV private sector investment. As with wind energy, the results demonstrate the beneficial impact of derisking. In this case, however, as demonstrated above, the LCOE of solar PV remains above the baseline cost, even after derisking.

Figure 7: Performance metrics for the selected package of derisking instruments in promoting 736 MW of solar PV investment in Tunisia



Source: modelling; see Table 4.14 and Annex C of the DREI Tunisia report for details of assumptions and methodology.
*In the BAU scenario, the full 2030 investment target may not be met.

Sensitivities

The modelling's sensitivity analysis confirms that the model's assumptions on (i) investment costs, (ii) capacity factors, (iii) gas costs and (iv) financing costs (cost of debt, cost of equity) are all key inputs that can have a large impact on the results.

As shown in Table 8 below, the assumptions on technology costs have particular potential for improving the overall competitiveness of wind energy and solar PV in Tunisia. The model's base-case uses current, 2014, investment costs. Should technology costs continue to fall, the sensitivity analysis examines a scenario which uses lower 2022 investment costs[16], resulting in significant reductions in both wind and solar PV LCOEs.

Table 8. Sensitivity analysis of wind energy and solar PV investment costs in Tunisia.
(All units EUR cents per kWh)

TECHNOLOGY	TYPE OF SENSITIVITY	ASSUMPTION	BAU LCOE	POST-DERISKING LCOE
Wind	Base Case	2014 Costs: EUR 1.241 million/MW	7.5 cents	5.8 cents
	Lower Investment Costs	2022 Costs: EUR 1.117 million/MW	6.8 cents	5.2 cents
Solar PV	Base Case	2014 Costs: EUR 1.190 million/MW	9.9 cents	7.7 cents
	Lower Investment Costs	2022 Costs: EUR 1.010 million/MW	8.5 cents	6.6 cents

Source: modelling; see Tables 4.13 and 4.14 and Annex C of the DREI Tunisia report for details of assumptions and methodology.

Conclusions

Implications for promoting renewable energy in Tunisia

A central conclusion from the modelling is the importance of systematically addressing investment risks. The results clearly identify a range of risks that currently impair the investment environment in Tunisia. The DREI methodology then takes a comprehensive approach to addressing these risks: if a risk is identified in the financing cost waterfall, a matching instrument targeting the risk is selected; both risk reduction (policy derisking) and risk transfer (financial derisking) instruments are used, benefiting from their complementary roles; and, lastly, the instruments are implemented in a sustained way, across the entire modelling period from 2014 to 2030.

The key conclusion from the modelling is that investing in derisking measures, bringing down the financing costs of wind energy and solar PV in Tunisia, appears to be highly cost-effective when measured against paying direct financial incentives to compensate investors for higher risks. Instead of using scarce public funds to pay higher electricity tariffs (for instance, in the form of a premium feed-in tariff), it is advantageous to first target specific investment risks (for example, those associated with power markets, grid/transmission and counterparty risk), thereby changing the fundamental risk/reward profile that energy investors face in Tunisia.

Premium prices for wind energy and solar PV in Tunisia may then still be required to supplement derisking efforts, particularly with current technology costs and when these technologies are not yet cost-competitive with the existing energy mix. However, the results indicate that all derisking instruments that can be immediately implemented should be prioritised before resorting to direct financial incentives to buy down any residual risks.

[16] The modelling period is 2014-2030. The year 2022 is selected as it reflects the mid-point of this period.