

NS-201 - NAMA Support for the Tunisian Solar Plan

Tunisia

NAMA Seeking Support for Implementation

A Overview

A.1 Party

Tunisia

A.2 Title of Mitigation Action

NAMA Support for the Tunisian Solar Plan

A.3 Description of mitigation action

The Tunisian Solar Plan (TSP), originally formulated in 2009, was revised in 2012 with the financial support of the Agence Française de Développement (AfD) to achieve a total renewable energy penetration target of 30% of the Tunisian 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. The TSP targets are based on an electricity demand baseline that includes the voluntary adoption of energy efficiency measures over the period 2013-2020 that result in an average reduction in the demand for electricity of 1.4% per year compared to a business-as-usual (BAU) scenario of no energy efficiency measures. In the BAU scenario, renewable electricity generation would be only 5% by 2030, and it would come primarily from wind energy. The TSP renewable electricity targets have been framed against this demanding 'energy efficient' baseline, rather than the BAU scenario, for a number of reasons, including: (1) the potential of renewable energy resources; (2) the technical and commercial maturity of renewable technologies; and (3) projected reductions in the costs of these technologies.

The implementation of the TSP will require significant levels of investment, estimated in the TSP at €6,040 million on a cumulative basis between 2013 and 2030. The principal sources of funding to implement the TSP have been identified as: (1) Government funding; (2) concessional loans from international development agencies; (3) national and international institutions; and (4) private-sector investment. Because these levels of investment are beyond the capacity of public finances, especially when considering competing public needs (e.g. poverty reduction, infrastructure development, health, etc.), the TSP places emphasis on catalysing private-sector investments through a combination of: (i) feed-in-tariffs (FiTs); (ii) private concessions through transparent competitive bidding processes; and (iii) public-private partnerships.

With the support of a UNDP-implemented, Global Environment Facility (GEF)-financed project, 'NAMA Support to the Tunisian Solar Plan' (PMIS 5340; 2014-2020), the Government of Tunisia - primarily through the National Agency for Energy Conservation of Tunisia (Agence Nationale pour la Maîtrise de l'Energie, ANME) - will develop the entire Tunisian Solar Plan as a single NAMA.

The implementation of a NAMA for the TSP, through the elimination of barriers to catalyse investments in renewable energy, will accelerate the decoupling of greenhouse gas emissions from economic growth. Because

of the sustainable development dividends that will emanate from the implementation of the TSP, the NAMA TSP can be seen as a vector for green growth in Tunisia, with positive benefits for energy security, the burden of state subsidies in the power sector in the face of rising fuel prices, and job creation.

The UNDP-implemented, GEF-financed project has developed a single and coherent NAMA for the TSP that will be implemented in the form of three technology-specific (i.e. wind, PV, CSP) NAMA actions plans. The NAMA TSP will integrate all of them into a single framework. This approach will serve to market the NAMA TSP as an integrated package to attract financial (international, bilateral, public and private-sector) support. The core components of the TSP NAMA will cover: clear long-term targets, a public instrument package to create an enabled investment environment, assessment of costs and incremental costs, assessment of socio-economic and environmental benefits, and MRV/ indicators. Each of these components will be implemented for the three Technology Action Plans (TAPs), which will then be combined into one overall NAMA. The TAPs are necessary to take into account the constraints, barriers to implementation and opportunities that are specific to each technology.

UNDP's De-Risking Renewable Energy Investment (DREI) methodology - www.undp.org/drei - has been applied in the design of the TSP NAMA. The theory of change underlying the DREI methodology is that one of the principal challenges for scaling-up renewable energy in developing countries is to lower the financing costs that affect renewables' competitiveness against baseline technologies - i.e. primarily fossil fuels. As these higher financing costs reflect barriers and associated risks in the investment environment, the key entry point for policy-makers to promote renewable energy is to address these risks and thereby lower the overall life-cycle costs of renewable energy. Taking this approach, the DREI methodology allows policy-makers to quantitatively compare different packages of measures to promote renewable energy and to compare their cost-effectiveness.

The DREI methodology acknowledges that barriers act as drivers of investor risk, and the existence of a barrier (e.g. lack of clear responsibility of different agencies for renewable energy approvals) increases the probability of negative events (e.g. delays due to poorly-administered licensing) affecting the renewable energy project. In turn, the negative events result in financial impacts for investors (e.g. transaction costs; delayed revenues; under- or no investment).

The detailed DREI results are available elsewhere - see the publication, "Tunisia: Derisking Renewable Energy Investment - Preliminary Modelling for NAMA Design" by Waissbein, Deenapanray and Kelly (2014).

In summary, the DREI analysis presents the costs of a set of public instruments (policy de-risking instruments and financial de-risking instruments) that can effectively lower the financing costs of renewable energy investments in Tunisia. The effect of the de-risking instruments is to lower the incremental cost of renewables compared with the (fossil fuel) baseline. In the case of wind energy, de-risking instruments are believed to be able to reduce the cost of wind energy below the baseline

- i.e. wind energy will become more cost-competitive than combined-cycle gas turbines. In the case of solar PV, de-risking instruments are not, by themselves, sufficient to remove the entire incremental cost compared with the baseline. In this case, a premium electricity payment (a feed-in tariff or negotiated purchase price of electricity in a Power Purchase Agreement) will be required for investors to be willing to invest in solar PV generation capacity.

In the context of the TSP NAMA, this premium payment will be developed as a regionally-differentiated (i.e. across Tunisia's governorates) 'territorial performance-based mechanism' (TPBM). The TPBM will be based on delivering sustainable development benefits to the governorates through the promotion of specific (to be determined by geospatial analysis) installed capacities of the three TSP renewable energy technologies (solar PV, solar CSP and wind). The financial incentive will be based on the difference in LCOEs between the post-derisked renewably-generated electricity and the baseline (which is currently combined-cycle gas turbine electricity, but could also be another baseline fossil such as coal in the future).

This NAMA submission to the NAMA Registry is seeking financial support for:

- Design and implementation of the sub-set of policy and financial de-risking instruments that are not already receiving GEF financial support in the context of the UNDP-implemented, GEF-financed project, 'NAMA Support to the Tunisian Solar Plan' .

- Funding for the premium payments required for solar PV electricity after de-risking (i.e. funding for the territorial performance-based mechanism, TPBM).

A.4 Sector

<input checked="" type="checkbox"/> Energy supply	<input type="checkbox"/> Transport and its Infrastructure
<input type="checkbox"/> Residential and Commercial buildings	<input type="checkbox"/> Industry
<input type="checkbox"/> Agriculture	<input type="checkbox"/> Forestry
<input type="checkbox"/> Waste management	

Other

A.5 Technology

<input type="checkbox"/> Bioenergy	<input type="checkbox"/> Cleaner Fuels
<input type="checkbox"/> Energy Efficiency	<input type="checkbox"/> Geothermal energy
<input type="checkbox"/> Hydropower	<input checked="" type="checkbox"/> Solar energy
<input checked="" type="checkbox"/> Wind energy	<input type="checkbox"/> Ocean energy
<input type="checkbox"/> Carbon Capture and Storage	<input type="checkbox"/> Low till / No till
<input type="checkbox"/> Land fill gas collection	

Other

A.6 Type of action

<input checked="" type="checkbox"/> National/ Sectoral goal	<input type="checkbox"/> Project: Investment in machinery
<input type="checkbox"/> Strategy	<input type="checkbox"/> Project: Investment in infrastructure
<input checked="" type="checkbox"/> National/Sectoral policy or program	<input type="checkbox"/> Project: Other

Other

A.7 Greenhouse gases covered by the action	<input checked="" type="checkbox"/> CO2	<input type="checkbox"/> CH4
	<input type="checkbox"/> N2O	<input type="checkbox"/> HFCs
	<input type="checkbox"/> PFCs	<input type="checkbox"/> SF6
	<input type="checkbox"/> Other <input type="text"/>	

B National Implementing Entity

B.1.0 Name	National Agency for Energy Conservation of Tunisia (Agence Nationale pour la Maîtrise de l'Energie, ANME)
B.1.1 Contact Person 1	Nejib Osman, Directeur du département des études et de la planification
B.1.2 Address	Citée Administrative Montplaisir, Avenue de Japon B.P.213
B.1.3 Phone	+216 71 906 900
B.1.4 Email	osman.nejib@anme.nat.tn
B.1.5 Contact Person 2	
B.1.6 Address	
B.1.7 Phone	
B.1.8 Email	
B.1.9 Contact Person 3	
B.1.10 Address	
B.1.11 Phone	
B.1.12 Email	
B.1.13 Comments	The National Implementing Entity, ANME, is the recipient of US\$3.6 million of Global Environment Facility financial support to develop the Tunisian Solar Plan NAMA.

C Expected timeframe for the implementation of the mitigation action

C.1	Number of years for completion	5
C.2	Expected start year of implementation	2015

D Currency

D.1	Used Currency	<input type="text" value="AED"/>
		Conversion to USD: 1

E Cost

E.1.1 Estimated full cost of implementation	707900000
E.1.2 Comments on full cost of implementation	<p>All costs are stated in 2014 present value terms.</p> <p>1. Wind energy:</p> <p>EUR 8.4 million in policy de-risking and EUR 279 million in financial de-risking.</p> <p>i. Policy De-Risking Instruments</p> <ul style="list-style-type: none"> - Power market risk instruments: Euro 4.4 million - Permits risk instruments: Euro 800,000 - Social acceptance risk instruments: Euro 800,000 - Resource & technology risk instruments: Euro 700,000 - Grid/transmission risk instruments: Euro 800,000 - Counterparty risk instruments: Euro 400,000 - Financial sector risk instruments: Euro 500,000 <p>- TOTAL: Euro 8.4 million</p>

ii. Financial De-Risking Instruments

- Grid/transmission risk instruments: Euro 23.1 million
- Public loans: Euro 192.1 million
- Currency/macroeconomic risk instruments: Euro 63.8 million

- TOTAL: Euro 279 million

iii. Direct Financial Incentives (Territorial-Based Performance Mechanism)

- Present value of 20-year PPA premium: Euro 0

iv. Overall wind energy total: Euro 287.4 million

2. Solar PV:

EUR 4.4 million in policy de-risking, EUR 141 million in financial derisking and EUR 276 million in a price premium.

i. Policy De-Risking Instruments

- Power market risk instruments: Euro 2.2 million
- Permits risk instruments: Euro 400,000
- Social acceptance risk instruments: Euro 500,000
- Resource & technology risk instruments: Euro 400,000
- Grid/transmission risk instruments: Euro 400,000
- Counterparty risk instruments: Euro 200,000
- Financial sector risk instruments: Euro 200,000

- TOTAL: Euro 4.3 million

ii. Financial De-Risking Instruments

- Grid/transmission risk instruments: Euro 11.6 million
- Public loans: Euro 96.8 million
- Currency/macroeconomic risk instruments: Euro 32.2 million

- TOTAL: Euro 140.6 million

iii. Direct Financial Incentives (Territorial-Based Performance Mechanism)

- Present value of 20-year PPA premium: Euro 275.6 million

iv. Overall solar PV total: Euro 420.5 million

Guide to risk categories:

a. Power market risk:

- Risk description: risk arising from limitations and uncertainties in the energy market, and/or sub-optimal regulations address these limitations and promote renewable energy markets.

- Policy de-risking instruments: (i) Regular updates of national energy planning, including national-level resource inventory/mapping, technology options, and renewable energy target formulation; (ii) establish an independent energy regulator; (iii) implement FiT and PPA

tendering, including well-designed standard PPA.

b. Permits risk:

- Risk description: risk arising from the public sector's inability to efficiently and transparently administer renewable energy-related licensing and permits.

- Policy de-risking instruments: (i) establish a one-stop shop for renewable energy permits; reduction of process steps; harmonisation of requirements; (ii) enforce transparent practices, renewable energy-related corruption control and fraud avoidance mechanisms, and establish effective recourse mechanisms.

c. Social acceptance risk:

- Risk description: risks arising from lack of awareness and resistance to renewable energy from end-users and special interest groups.

- Policy de-risking instruments: (i) implement active publicity, media and awareness campaign targeting key stakeholder groups; (ii) establish favourable local policies and promote and pilot community-based models (e.g. equity stakes in renewable energy projects).

d. Resource & technology risk:

- Risk description: risks arising from use of the renewable energy resource and technology (resource assessment, construction and operational use, hardware purchase and manufacturing).

- Policy de-risking instruments: (i) dissemination of national resource assessment findings.

e. Grid transmission risk:

- Risk description: risks arising from limitations in grid management and transmission infrastructure.

- Policy de-risking instruments: (i) develop a grid code for new renewable energy technologies; (ii) sharing of international best practice in grid management; (iii) develop and regularly update a long-term national transmission/grid plan to include intermittent renewable energy.

- Financial de-risking instruments: (i) 'take-or-pay' in PPA whereby IPP is reimbursed for grid failure (black-out, brown-out) and/or curtailment (due to mismatches in grid management of supply/demand).

f. Counterparty risk:

- Risk description: risks arising from the utility's credit quality and an IPP's reliance on payments.

- Policy de-risking instruments: (i) establish international best practice in utility/distribution company management, operations and corporate governance; (ii) implement sustainable cost-recovery policies.

- Financial de-risking instruments: (i) Government letter of support

for PPA payments to IPPs.

g. Financial sector risk:

- Risk description: risks arising from general scarcity of investor capital (debt and equity), and investors' lack of information and track record on renewable energy.

- Policy de-risking instruments: (i) promote financial sector policy favourable to long-terms infrastructure, including project finance.

- Financial de-risking instruments: (i) public loans from international financial institutions to IPPs.

h. Political risk:

- Risk description: risks arising from country-specific governance and legal characteristics.

i. Currency/macroeconomic risk:

- Risk description: risks arising from the broader macroeconomic environment and market dynamics.

- Financial de-risking instruments: (i) partial indexing of local currency tariffs in PPAs, so that IPPs are reimbursed for local currency depreciation of tariff.

E.2.1 Estimated incremental cost of implementation 707900000

E.2.2 Comments on estimated incremental cost of implementation

The UNDP-GEF project (budget US\$ 3.6 million GEF grant + US\$ 65.4 million co-finance) has designed the NAMA framework and has identified the specific elements that make up the NAMA. Further, the GEF project is financing specific elements of NAMA implementation, including institutional strengthening and coordination, design of the Territorial Performance-Based Mechanism, MRV systems, and investment support to two renewable energy plants (a 10 MW solar PV plant at Tozeur and a 24 MW wind farm at Gabes) that form part of the Tunisian Solar Plan. Additional funding is sought for the currently-unaddressed NAMA elements described in Section E.

F Support required for the implementation the mitigation action

F.1.1 Amount of Financial support

707900000

F.1.2 Type of required Financial support

<input checked="" type="checkbox"/> Grant	<input checked="" type="checkbox"/> Guarantee
<input checked="" type="checkbox"/> Loan (sovereign)	<input checked="" type="checkbox"/> Equity
<input checked="" type="checkbox"/> Loan (Private)	<input type="checkbox"/> Carbon finance
<input checked="" type="checkbox"/> Concessional loan	
<input type="checkbox"/> Other	<input type="text"/>

F.1.3 Comments on Financial support

The EUR 707.9 million estimate captures the cost of:

- Policy de-risking instruments
- Financial de-risking instruments
- Premium payments (FiT or negotiated PPA price)

necessary to ensure cost-effective implementation of the Tunisian Solar Plan.

Details of the cost breakdown of this aggregate amount are given in Section E above. Policy de-risking instruments typically require grant support; financial de-risking instruments require a mix of grant, loan and guarantee support; and premium electricity payments could be funded through grants, loans or other financial structures.

F.2.1 Amount of Technological support

F.2.2 Comments on Technological support

The costs of technical support are generally included in the costs of the de-risking instruments and premium payments stated in Sections E and F. The technical and institutional support being provided by the UNDP-implemented, GEF-financed 'NAMA Support to the Tunisian Solar Plan' project can also be leveraged in support of implementation of the de-risking instruments and premium payments.

F.3.1 Amount of capacity building support

F.3.2 Type of required capacity building support

<input type="checkbox"/>	Individual level
<input type="checkbox"/>	Institutional level
<input type="checkbox"/>	Systemic level
<input type="checkbox"/>	Other <input type="text"/>

F.3.3 Comments on Capacity Building support

The technical and institutional support being provided by the UNDP-implemented, GEF-financed 'NAMA Support to the Tunisian Solar Plan' project can be leveraged in support of implementation of the de-risking instruments and premium payments. The GEF project is also providing a structured programme of capacity building support.

F.4 Financial support for implementation required

F.5 Technological support for implementation required

F.6 Capacity Building support for implementation required

G Estimated emission reductions

G.1 Amount

30.5

G.2 Unit

MtCO₂e

G.3 Additional information (e.g. if available, information on the methodological approach followed)

Based on ANME's official assessment of the mitigation benefits of the Tunisian Solar Plan between 2015 and 2030, using a grid emission factor of 0.5 tCO₂/MWh.

H Other indicators

H.1 Other indicators of implementation

The UNDP-implemented, GEF-financed project commenced implementation in early 2015.

I Other relevant information

I.1 Other relevant information including co-benefits for local sustainable development

NAMA co-benefits will include:

- 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 resources 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.

J Relevant National Policies strategies, plans and programmes and/or other mitigation action

J.1 Relevant National Policies

The Tunisian energy market is a regulated market, the key regulation for which includes Law No. 72 of 2 August 2004, concerning energy management, paving the way for the publication of new implementing legislation to support energy efficiency, as amended by Law No. 7 of 9 February 2009, which additionally introduced important elements of promotion of renewable energies, in particular relating to electricity production.

The regulations governing the production of electricity from renewable energy are:

- Decree No. 362 of 9 February 2009, amending and supplementing Decree No. 2234 of August 22th 2005.
- Decree No. 2773 of 28 September 2009, establishing the conditions for electricity transmission, the sale of surplus to STEG and a cap on such sales. Prices of the sales are set by the Minister of Industry. Under this regulation, companies operating in the industrial, agricultural or tertiary sectors are allowed to generate renewable electricity for internal consumption (i.e. auto-production), with the ability to export a maximum of 30% of this self-generated electricity to the national grid on an annual basis. The purchase price paid by STEG to the auto-producer is the same price applicable to consumers and varies depending on the grid voltage connecting the plant with the grid.
- A proposed new law on the generation of electricity from renewable energies that has been sent to the National Constituency Assembly (NCA) for adoption and proclamation. It was approved by the Commission on Energy and Productive Sectors at the NCA at the end of July 2014. It will now be discussed in the plenary session at the NCA. This law proposes three ways in which renewable electricity can be produced:

1. Auto-production - applicable to any local government institution or public or private enterprise that is active in the industrial or agricultural sectors. The conditions for the transport of electricity and the sale of any excess production to STEG, including the maximum quantity of renewable electricity that can be sold, will be defined by a subsequent ordinance. The law stipulates that the auto-producer must also be the owner of the renewable power plant/facility. The conditions are similar to those contained in Decree No. 2773.

2. Independent power generation for sale entirely and exclusively to STEG - the power generation project will be reviewed by a technical committee, which will make necessary recommendations to the Ministry overseeing the energy sector. Typically, the maximum installed renewable capacity will be specified by ordinance. For projects that exceed the maximum installed capacity, a competitive bidding process will be adopted.

3. For export - the project must be of national interest and will be developed through a concession. A technical committee will study the technical and financial viability of the project, and make recommendations to the Ministry overseeing the energy sector. The transmission of the electricity can be made either along a dedicated power line (in which case the promoter will cover all the investment and maintenance costs, and cede the transmission line free of charge to STEG after termination of the contract) or by using the national grid if it has the capacity to do so.

National Climate Change Strategy (NCCS)

In 2010, Tunisia initiated a large national stakeholder consultation process which led to the development of its National Climate Change Strategy. The Strategy proposes an anticipatory approach to adaptation and a proactive mitigation policy in order to reduce the economy's carbon intensity. An ambitious quantitative goal has been formulated and is currently being updated in light of the preparation of the intended nationally determined contribution. The NCCS sees NAMAs and market-based instruments as key elements of Tunisia's mitigation policy, particularly in the energy sector. Further, it highlights the need for establishing strong governance for climate change based on appropriate institutional arrangements that will allow cross-sectoral (i.e. horizontal) interactions. Based on the principle of subsidiarity, the NCCS also proposes that the governance structure should foster better linkages between national and regional (sub-national) levels of government. A strong emphasis for both climate change mitigation and adaptation should be on job creation and poverty alleviation. 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. The NCCS was developed by the Ministry of Environment and supported by GIZ.

Low Carbon Development Strategy (LCDS)

UNDP is supporting ANME to mobilise resources for developing a Low Carbon Development Strategy (LCDS) for Tunisia. The LCDS will support a sustainable energy transition process in Tunisia through the transformation of public policies. The LCDS is expected to: (1) set ambitious goals in terms of energy efficiency, the development of

renewable energies and GHG reduction; (2) suggest measures and schemes to put in place to support the energy transition while contributing to green growth, job creation and the fight against poverty; and (3) encourage citizen involvement in the energy transition process by involving civil society, promoting regional and local governance, and encouraging a responsible dialogue to adopt a sustainable energy model. In order to achieve its development objectives, the LCDS will focus on: (1) establishing regional energy governance to integrate the regions in the energy transition process; (2) reducing the energy vulnerability of poor and middle social classes; (3) promoting green growth and job creation through the energy transition; and (4) establishing a permanent dialogue on energy to increase the ownership of low-carbon development at all levels of society.

National Capacity Self-Assessment (NCSA)

Tunisia conducted an NCSA 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 highlights 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.

National Communications

Tunisia submitted its Initial National Communication to the UNFCCC in 2001 and has recently finalised its Second National Communication to the UNFCCC. Tunisia is launching its Third National Communication and is receiving GEF support to submit its first Biennial Update Report (BUR). The NCs and BUR are effective means of detailing planned and underway NAMAs, and enhancing their visibility to attract financial support. The lessons-learned from developing national GHG inventories for the NCs are useful for developing and harmonising MRV systems for NAMAs.

J.2 Link to other NAMAs

K Attachments

K Attachments	Title	Description
	Derisking Renewable Energy Investment - Full Report.pdf	Publication developed by UNDP and ANME during design of the GEF-supported NAMA: “Tunisia – Derisking Renewable Energy Investment for the Tunisian Solar Plan NAMA”. Available online here: http://www.undp.org/content/undp/en/home/librarypage/environment-energy/low_emission_climateresilientdevelopment/derisking-renewable-energy-investment/drei-tunisia.html

Solar P
.pdf

K.1 Attachment description

K.2 File

Browse...

L Support received

L.1 Outside the Registry

L.2 Within the Registry

US\$ 3.6 million from the Global Environment Facility (GEF)

Support provided	SupportType	Amount	Comment	Date
Global Environment Facility (GEF) Trust Fund	Financial	3,600,000	The GEF provided a financial support to the National Implementing Entity, ANME, to design and partially implement this NAMA. The design phase was concluded in 2014 and the GEF project is now implementing a set of activities that address some, but not all, of the NAMA elements. Additional donors/financiers are welcomed/requested to address these gaps in full NAMA implementation.	8/31/2015 4:29:37 PM