

Country:	Algeria
Request Identification Number:	2015-051/ALG-01

Title:	Assistance technique à l'étude et la réalisation d'une centrale photovoltaïque au sol de puissance nominale 1MWc
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Summary of the CTCN Technical Assistance

This quick response plan is linked to the identified need in Algeria for technical assistance in the implementation including the EPC phase (EPC: engineering, procurement and construction) process for photovoltaic technology. This building up of technical expertise in this field is important in the context of the ambitious national program in Algeria, which aims to install over 13,000 MW of solar PV by 2030.

Based on these ambitions, CDER, as one of the public institutions involved in the realisation of Algeria's renewable energy program, has identified the wish to realize a 1 MW photovoltaic power plant in the area of Boughezoul (170 km south of Algiers). The realization of this 1 MW PV plant will act as a hands-on implementation model and learning vehicle.

The quick response plan (this proposal) will produce, over a period of approximately 3 months, a detailed longer-term technical assistance plan, which defines the mode of cooperation between CDER and CTCN, as well as the knowledge transfer needed by CDER and their local partners to successfully replicate similar projects in the future.

1. Overview of the CTCN technical assistance

1.1 Technology aspects

This quick response plan supports the design, installation and testing of a 1 MW solar PV power plant that will adopt solar modules produced locally in Algeria by partner Condor.

1.2 Objectives (outcomes)

This quick response plan will establish the necessary common understanding between the CTCN and CDER in order to develop a full technical assistance plan, which will support the development of the 1 MW planned project and CDER's desire to build local capacity for similar future projects. That full assistance plan has the objective to build local capacity to perform EPC contracting using local suppliers to design, install and operate small scale grid connected solar PV projects. These skills are not currently practiced by local parties in Algeria.

1.3 Results (outputs expected from CTCN assistance)

The CTCN planned full assistance will result in the local partner Condor operating as an EPC contractor to successfully deploy and operate the 1MW plant. It will additionally support CDER in their role to promote similar efforts with other parties in the future.



1.4 Expected use of outputs

The ability for local parties to catalyze and successfully deploy solar PV projects will very clearly contribute to Algeria's energy and climate goals, as solar PV is seen in their national strategy as a key technology in this regard.

2. Description of the Assistance

2.1 Activities

This quick response plan is a precursor and input to a more detailed and extensive technical assistance plan that will run over the length of the 1 MW project that CDER plans to support. As such the activities focus around understanding support needs, preparation of this full assistance plan and an initial concept for the design of the facility in question. The actual execution of the detailed technical assistance plan will be done after this quick response plan and will be arranged subsequently with the CTCN.

Activity 1 – inception mission and report

The scoping and design phase of the assistance (i.e. this quick response plan) will start with a 1-2 day inception meeting at CDER premises, in order to develop a common understanding of the longer term support that is required as well as to understand the specifics of the project that is being developed (with a focus on technical aspects that will determine the design and installation). The following 6 activities will be addressed at this inception mission and follow up reporting:

Activity 1.1 – Project assessment

Jointly assess the project in more detail; including the expected timeline and process for obtaining grid connection, and producing the design basis for the 1 MW PV power plant.

Activity 1.2 – Gap analysis

Understand current capacities and skills at CDER and Condor side, what gaps might exist and how best to provide assistance to overcome these. On this basis define training and capacity building requirements.

Activity 1.3 – R&D strategy

Identify long term R&D issues, relevant for the local circumstances. On this basis, and Activity 1.2, define training and capacity building requirements.

Activity 1.4 – Project team

Identify the project team for the full Response Plan.

Activity 1.5 – Institutions and policy

Identify institutional and regulatory issues that should be included in the scope of a full technical assistance programme.

Activity 1.6 – Concept sketch

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Sketch out an initial concept for the project and key activities including a plan for longer term engagement with CTCN assistance¹ for the remainder of the project cycle.

Activity 1 – Deliverables

Deliverables	Delivery date
Short scoping report outlining outcomes of the inception meeting	Week 6

Activity 2 – Scoping and design

The scoping and design activity focuses around a 3-4 day workshop at CDER, which will be used to work out all details, jointly with CDER and Condor, regarding the detailed assistance plan and provides the basis for preparing a concept design for the 1MW solar PV plant.

Activity 2.1 – Concept of design

Basis of practical and industrial design for 1 MW solar PV installation: finalize an initial design concept for the 1MW solar PV system including grid connection and requirements.

Activity 2.2 – Scope and planning of the full assistance plan

Aim of this activity is to jointly draft and submit a full assistance plan, including tasks, milestones and required budget, that would take the 1 MW project through to completion and provide the necessary technical assistance to CDER and Condor during this process to build their capacity to recreate similar projects. This full assistance plan will include the identification and planning of tasks on a number of aspects including:

- Full technical design; including integration of Condor products
- Procurement phase; more general capacity building to CDER on universal procedures for procurement, with local regulations included where appropriate:
 - Role of EPC contractor (Condor is understood to be the EPC contractor for this project)
 - Organization of procurement phase (open tender, restricted tender, purchase of standard materials)
 - Terms of Reference for procurement and installation
 - Selection criteria for selection of companies executing the installation
 - Define training and capacity building requirements
- Identification of other issues, including:
 - Institutional and regulatory issues
 - Long term R&D issues, relevant for the local circumstances
 - Elements for commissioning and test run
 - Description of CTCN performance indicators

Activity 2 – Deliverables

Deliverables	Delivery date
Initial concept design for the 1MW system	Week 12
Full assistance plan that will support the project to completion	Week 12

¹ Contingent on CTCN rules and procedures, and availability of resources.

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2.2 Synergies and Baseline Setting

We have identified the following relevant initiatives:

1- At the request of SKTM, (a subsidiary of Algerian national gas and electricity distribution company Sonelgaz) in charge of renewable energy program, CDER is involved in the evaluation of the already operating PV solar station of 1.1MWc, inaugurated in July 2014 at Ghardaia (750 km south of Algiers). The latter electricity production is shared between the four main PV technologies: Mono-Si(452 kWc), poly-Si (452 kWc), a-Si (100 kWc), thin-film-CdTe (100 kWc).

2- Beyond its PV module production capacity of 50 MWc, the private industrial Group Condor has extended its activity to large scale PV systems (solar lighting, solar pumping, solar electricity generation).

3- Several PV solar plants among the initial SKTM program launched late 2013 and totalling 343 MWc came to production, whereas the remaining part is under construction.

The CTCN assistance baseline intended for CDER is mainly linked to an urgent need of renewable energy technology transfer, which constitutes a major argument to help the Algerian party benefit from its geographical characteristics to build a better future in terms of climate change.

2.3 Timeline

Workshops/missions are indicated with an 'x' and deliverables are indicated with a '**'

Activity	Week												
	1	2	3	4	5	6	7	8	9	10	11	12	
Activity 1 – inception mission and report													
1.1 – project assessment			x										
1.2 – gap analysis													
1.3 – R&D strategy													
1.4 – project team													
1.5 – institutions and policy													
1.6 – concept sketch						*							
Activity 2 – scoping and design													
2.1 – concept of design									x				
2.2 – full assistance plan												*	

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2.4 Expertise required

Activity 1 Inception mission & report	
<i>Expert 1</i>	<i>Senior consultant solar PV technology</i>
<i>Expert 2</i>	<i>Senior energy advisor</i>
<i>Event 1 Inception workshop (2 days)</i>	<i>Workshop at CDER premises, interactive, objective to align the resource plan framework and tasks.</i>
<i>Materials</i>	<i>Venue for workshop, consumables</i>
Activity 2 Scoping & design	
<i>Expert 1</i>	<i>Senior consultant solar PV technology</i>
<i>Expert 2</i>	<i>Senior energy advisor with EPC experience</i>
<i>Expert 3</i>	<i>Senior expert on grid integration</i>
<i>Event 2 Design workshop (3 days)</i>	<i>Workshop to finalize the detailed plan for full assistance service, including resources, costs, planning</i>
<i>Materials</i>	<i>Venue for workshop, consumables</i>

2.5 Main partners

Stakeholder	Role to support the implementation of the CTCN assistance
Energy Development Centre renewable (CDER) (Lead Partner)	Assistance to the design, construction, commissioning and operation as the central experimental platform full scale
Private industrial group Condor Electronics	Providing the necessary photovoltaic modules build the generator (1 MW _p) and other components and accessories for the embodiment of the central. Planned to be the EPC contractor for the project.
Public company character Industrial and Commercial (EPIC Boughezoul)	Development of the legal framework on the plate Land for the project and contribution to Preliminary site facilities as well as Civil subsequent work
National transmission system operator	Provides timeline and specifications for grid connection to the facility

2.6 Indicative budget

Activities	Estimated Budget (USD)
Activity 1.1 to 1.6	17.5 kUSD
Activity 2.1 to 2.2	25 kUSD

Travel and workshop costs	7.5 kUSD
Measures, evaluation and learning	n/a for this type of precursor project
Total	50,0 kUSD

Implementation of this Response Plan will be led by the Climate Technology Centre (including selection, contracting, supervision and monitoring of implementation partners) in close coordination with the corresponding National Designated Entity and relevant national actors.

2.7 Gender considerations

The technical nature of this request, with a strong focus on solar PV technologies and R&D capabilities, means that it does not have a large gender aspect to it. However, all efforts will be made to ensure that the workshop(s) held in Algiers will be inclusive.

2.8 Risk identification and risk mitigation

Risk	Consequence	Probability	Mitigation measure
Withdrawal of partner organisations	Material and construction partner lost	Low	<p>Strong existing relationship between NDE and additional project partners</p> <p>Use of scoping mission to clarify roles, responsibilities and expectations before proceeding</p> <p>Phased approach with a Quick Response Plan</p>
Sickness of expert(s)	Expert not available	Low	Back-up for both experts
Travel restrictions	No travel possible	Low	Conduct meetings in Algiers area

3. Long-term impacts of the assistance

3.1 Expected climate change-related benefits

	CTCN climate technology impact	Anticipated contribution from CTCN assistance
1	Climate technologies adapted to national context are identified and prioritized to enable their deployment and/or transfer in	Renewable energy development

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	the requesting countries	
2	New national Technology Needs Assessment (TNA) and Technology Action Plan (TAP) as a result of the response	Solar PV plant technology transfer
3	Progress made against mitigation objectives (i.e. energy and carbon intensity reduction) as a result of the response	About 30 % of electricity consumption in Algeria at 2030 horizon should be from renewable resources
4	Progress made against adaptation or resilience objectives (e.g. climate vulnerability index improvement) as a result of the response	Mitigation of desert climate advance towards the northern regions of the country
5	New mitigation or adaptation technology projects/initiatives implemented as a result of the response	Generalized use of renewable energy
6	New or strengthened policies/ laws developed, approved and enacted as a result of the response	Better choices in developing the country own capacities
7	New policies/laws where climate change was mainstreamed as a result of the response	National renewable energy program revision towards a better efficiency
8	Country integrating climate change mitigation and/or adaptation issues into its planning and policies as a result of the response	The central highland regions in which will be deployed the major part of PV will contribute to the population redeployment from the overpopulated northern regions
9	New or strengthened Public-Private Partnerships (PPP) created directly as a result of the response	Although PPP were underdeveloped in the past, these are highly recommended in the new Algerian economic policy
10	New or strengthened twinning arrangement created as a result of the response	There is not yet enough experience in the dawning renewable energy activity in Algeria to make a credible statement
11	Capacities to access and attract public and private finance increase to enable financing of technology deployment	This is one of the major new Algerian economic plan recommendations and the CDER initiative is a good example
12	Post-response intervention funding attributable to the response.	The success of such CDER initiative would be a major argument according to the National Renewable Energy program objectives
13	Framework and analysis of local production developed to enable deployment of national production of climate technologies	To this end, Renewable energy technology transfer is an important prerequisite for a developing country like Algeria

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3.2 Co-benefits

The CTCN assistance will contribute to the following medium and long-term benefits in Algeria, under the (likely) assumption that Algeria will benefit from the development and implementation of solar PV technology in the region and related market introduction:

- Considerable annual energy savings, in comparison to conventional generation of power for the household and commercial sectors (based on information provided by the NDE);
- Reduction of transmission losses, CO₂ emissions, NO_x emissions, and energy demand during peak usage;
- Expected huge annual opportunity cost for the government;
- Potential market share of the technology in the region;
- Creation of jobs in the industry.

3.3. Post-assistance plans and actions

From the Algerian point of view, an authentic renewable energy technology transfer is a strategic objective that would contribute to the overall country development. To this end, the required CTCN assistance may be considered, among others, as an efficient step. Its success would surely induce countless benefits by enabling the development of climate friendly activity that will also create wealth and employment for the country's younger generations, who represent 70% of the Algerian population.

Furthermore, as a public central research institution and since the national renewable energy program has been launched, the CDER has been requested to assist in developing many projects in its field of expertise. Hence, several expected and evident benefits related to its mission which covers both the concerns related to climate change and the economic and technological development of the country are lying behind its request of CTCN assistance

3.4 Monitoring and Reporting of technical assistance results and impacts

Milestones for each of the activities and deliverables will be detailed at the outset of the intervention. Regular and efficient communication will be established to allow for adaptive management and refine the approach as more information is gathered and produced. The NDE of Algeria (CEDER) will contribute to those efforts and support the timely implementation of the activities and the reports.

**CTCN Technical Assistance
Response Plan**

Note: More detailed performance indicators of the CTCN assistance will be evaluated in the full response plan (task 2.2) as these are most relevant to the subsequent phase of support.

Performance indicators of CTCN Assistance				
Response output (linking to sec 1.2)	How output will be used to ensure creation of result	Expected result	Expected outcome of result (linking to sec 1.1)	Anticipated impact that outcome will produce (linking to section 3)
<i>Full technical assistance plan is developed</i>	<i>The detailed technical assistance plan will be used as the basis for establishing a long-term assistance programme from the CTCN</i>	The CTCN provides support for technology transfer over the course of the planned PV facility development	<i>A 1MWe grid connected solar facility is able to be constructed with associated EPC technology transfer to Algerian partners</i>	Algerian partners are able to replicate similar projects and train others to do so in the future.

4. Signatures

Signatures of the requesting country

NDE

Name: Samy Bouchaib

Title: Focal Point

Date:



Signature:  **Samy BOUCHAIB**
Chef de Département
des Nouvelles Technologies
au Service des EnR

Request Proponent

Name: Noureddine Yassaa

Title: Director

Date:

Signature:  

Signatures of the CTCN

CTCN Director

Name: Jukka Uosukainen

Title: CTCN Director

Date:


Signature: 

Climate Technology Manager

Name: Patrick Nussbaumer

Title: Industrial Development Officer

Date: 8 March 2016

Signature: 

Annex 1: Response Logframe

Activity <i>(link to sec 2)</i>	Description of sub-activities conducted by the CTCN	Output/ Deliverable <i>(link to sec 2.9)</i>	Expected Outcome <i>(link to sec 3)</i>	Main national partners involved	Objectively Verifiable Indicator <i>(see Annex 5 guidance)</i>	Means of Verification (data source, method of collection, responsibility and periodicity)
Activity 1: <i>inception mission and report</i>	1.1 – project assessment		– Progress made towards		– Scoping report available and approved by CDER	
	1.2 – gap analysis				– Reported close engagement between Response Implementer, NDE and local partners	NDE reporting
	1.3 – R&D strategy	– Scoping report	Implementing new mitigation project	CDER and Condor		
	1.4 – project team					
	1.5 – institutions and policy					
Activity 2: <i>scoping and design</i>	2.1 – concept of design	– Initial concept design for the 1MW system	– Progress made towards implementing new mitigation project	CDER, Condor, EPIC Boughzoui and TSO	– Concept available and approved by CDER	
	2.2 – full assistance plan	– Full assistance plan that will support the project to completion	Knowledge transfer to NDE and local partners		– Full assistance plan available and approved by CDER and CTCN	NDE reporting
					– Reported close engagement between Response Implementer, NDE and local partners	

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