

**MENA CSP Technical Assistance Program
Project Approval Request
Public Document
World Bank Group & African Development Bank**

1. Country/Region:	MENA	2. CTF Project ID#:	(Trustee will assign ID)
3. Source of Funding:	<input type="checkbox"/> FIP	<input type="checkbox"/> PPCR	<input checked="" type="checkbox"/> CTF
4. Project/Program Title:	MENA CSP Technical Assistance Program		
5. Type of CIF Investment:	<input type="checkbox"/> Private	<input checked="" type="checkbox"/> Public	<input type="checkbox"/> Mixed
6. Funding Request in million USD equivalent:	Grant: USD 10 million	Non-Grant: n/a	
7. Implementing MDB(s):	World Bank (WB) and African Development Bank (AfDB)		
8. National Implementing Agency:	<p>Algeria: Ministry of Energy and Mines, and Ministry of Industry (in charge of industrial promotion)</p> <p>Egypt: New and Renewable Energy Authority, and Industrial Modernization Center</p> <p>Jordan: Ministry of Energy and Mineral Resources, and National Electric Power Company (NEPCO)</p> <p>Libya: Renewable Energy Authority of Libya (REAoL)</p> <p>Morocco: Moroccan Agency for Solar Energy (MASEN), the National Agency for Renewable Energy and Energy Efficiency (ADEREE), Ministry of Energy, Mines, Water and Environment and Ministry of Industry, Commerce and Investment</p> <p>Tunisia: National Agency for Energy Conservation (ANME), the national utility STEG and Ministry of Trade and Industry (also responsible for energy)</p>		
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10. Program Description (including objectives and expected outcomes)			

Brief Summary

The proposed MENA CSP Technical Assistance (TA) program is part of the revised CTF MENA CSP Investment Plan (IP), which was endorsed by the Trust Fund Committee in May 2013. The program supports large-scale deployment of CSP technology by enhancing the developmental and economic impacts through the development of an enabling framework (including informed policies and

programs) in participating countries (Algeria, Egypt, Jordan, Libya, Morocco, and Tunisia), capacity reinforcement for project structuring and successful management of complex bidding processes and finally skill enhancement and other measures to ensure that derived economic and social benefits are realised. To this end, the program will facilitate technology and know-how transfer, strengthen capacities, and address market barriers by providing comprehensive support organized in four pillars. The support includes just-in-time assistance, seed funding, platforms for cooperation and knowledge exchange, training and education courses, and expertise for developing a pipeline of CSP projects and fostering an enabling framework. The program will be implemented jointly by the World Bank and the African Development Bank in coordination with country and regional agencies involved in CSP development and industry promotion. Lessons learned from the program implementation will be documented and shared at the regional and global level.

I. Context

The MENA CSP TA Program is proposed in the context of large-scale CSP deployment support by enhancing local economic benefits. In December 2009, the Trust Fund Committee of the Clean Technology Fund endorsed a US\$750 million investment plan (IP) to support the development of 1 GW of CSP generation capacity and associated transmission infrastructure in five MENA countries: Algeria, Egypt, Jordan, Morocco, and Tunisia. The implementation of the original plan has been delayed in some countries. While Morocco has made significant progress with construction underway for the 160 MW Noor I CSP plant and first bidding stage completed for the 350 MW Noor II & III plants, some countries are somewhat behind their original implementation schedule. Egypt's Kom Ombo CSP project and Tunisia's Akarit project have completed preparatory studies but are now on hold. Jordan's Ma'an public sector project has been replaced by public-private partnership initiative with memorandum of understanding signed with private developers to construct parabolic trough and solar tower CSP plants totalling 225 MW. Algeria launched feasibility studies for the Megahir 80 MW CSP plant and pre-feasibility studies for the Naama 70 MW CSP plant.

One of the main reasons for implementation delays in some countries is the high CSP investment costs, making CSP adoption challenging on a cost-effectiveness basis. Though CSP investment costs are expected to decline—by 30-50% by 2020 according to IRENA¹—with technology learning and increased deployment, today's CSP investment and levelized costs for electricity generation remain high. The high investment cost leads to high incremental costs—the difference between the cost of the CSP plant and the cost of the next best alternative project—hindering the large-scale development of CSP. This explains why CSP deployment has been held back in Egypt and Tunisia which have been affected by the political disruption and economic recession that followed the Arab Spring, making it difficult to obtain the political commitment necessary to cover the incremental cost and provide the comfort to attract investors in supporting industries and services. Unless solutions are found to mitigate these incremental costs beyond the contribution that the CTF is already making, developing major CSP power plants will face challenges in some MENA countries.

Despite its high costs, CSP development carries benefits. The characteristics of the CSP technology are such that it will soon be able to deliver kWhs that are not only carbon free but also reliable and secure, at a cost which will be competitive with traditional technologies. Moreover CSP brings other

¹ IRENA and IEA-ETSAP Technology Brief E10 – January 2013.

energy benefits-- such as energy security, CO2 emission reduction, lower hydrocarbon dependency—and social and economic benefits—such as innovation, entrepreneurship, local industrial development and therefore job creation. For instance, increasing local manufacturing is a key ingredient for enhancing the economic benefits and cost-effectiveness of CSP projects. Domestic production of certain CSP plant components and provision of CSP-related services will create local jobs. The resulting increase of wealth and income could generate new demand for more services and products, contributing to improve local economies. A 2011 assessment² by the Fraunhofer Institute and Ernst & Young estimated that realizing 1 GW of installed CSP capacity by 2020 in the MENA region will have a direct and indirect local economic impact of US\$2.2 billion, assuming a local manufacturing share of 30.6% by 2025. Should the installed capacity increase to 5 GW (including 2 GW for serving export markets), the local economic impact would surge to US\$14.2 billion, with a local manufacturing share of 56.6%. CSP has the potential to contribute to sustainable economic growth and job creation in MENA through the development of innovative local ecosystems. The proposed TA program seeks to help the countries where Investment Plan (IP) implementation progress has been slow, in particular through transfer of knowledge and know-how from successful participating countries and regional integration and cooperation. It will seek to address the main barriers to CSP deployment by reducing costs through well managed tendering processes and setting up enabling framework, such as skill development, so that all derived economic benefits are realized. It will do so by offering participating countries support and assistance to assess the CSP market, to choose the appropriate business model, to design tendering processes and to assessing the labor force, logistical structure and other elements required to attract first class manufacturers and service providers. It will facilitate technology and know-how transfer by providing selected CSP industry segments with assistance and platforms for business cooperation. The program will also contribute to expanding the CSP market by exploring the potential for small-scale concentrated solar applications, addressing market barriers, and facilitating experience exchange between country agencies leading CSP development.

The program complements the MENA CSP Investment Plan (IP). The MENA CSP IP aims at scaling-up the deployment of CSP in the region through its replication potential. While the realization of the projects proposed in the MENA CSP IP will constitute a significant step forward towards replication, it is equally important to tackle sector-wide weaknesses—such as those in the legal and regulatory framework, the business enabling environment, the lack of qualified CSP workforce, and technology gaps—that are necessary to provide the foundation for the CSP scale-up. The proposed TA program will therefore complement the MENA CSP IP by targeting sector-wide issues and most importantly improving the economic viability of CSP investments in MENA by promoting stronger local contribution and technology transfer.

The program activities will go beyond the scope of project preparation grants (PPGs). PPGs primarily address single project needs, usually preparatory studies, and by nature each grant is limited to a single country. Addressing soft issues at the regional level is impossible to accommodate through PPGs. The proposed TA program is bridging this gap by allowing issues at the program/regional level to be tackled, and by providing MENA countries that so far do not have projects in the IP with

² WB/ESMAP. MENA region assessment of the local manufacturing potential for CSP projects. Fraunhofer ISI/ISE and Ernst&Young. 2011

opportunities for technical assistance related to CSP deployment, which could potentially lead to further concrete project development.

II. Program development objective

The development objective of the technical assistance (TA) program is to promote the deployment of concentrated solar technologies in participating MENA countries. It will focus on high-value impacts on the region's economies by seeking to expand the CSP market, improve the regulatory and policy frameworks, support the creation of ecosystems that will attract investors in related services and products/equipment, and strengthen capacities in participating countries.

The expected intermediate outcomes are (i) deepened knowledge of key country agencies and CSP industries/service providers in both technology and project identification and development; (ii) enhanced expertise in managing large transactions and the related bidding process; and (iii) informed policies and/or concentrated solar technology deployment programs.

III. Barriers/issues to be addressed

To achieve the development objective, a number of barriers should be addressed. High technology cost remains a major barrier to CSP deployment in MENA, and will be more adequately addressed under the MENA Investment Plan (IP). The program will seek to overcome the barriers through the following:

- **Market assessment:** The TA will provide support to size the market and segment it appropriately in each country, to identify the most attractive market segments. A strong and foreseeable CSP market is a primary driver for attracting significant external and local private sector investments. With delays in implementing the CTF investment plan and lack of time-bound project pipelines (except the case of Morocco) to achieve CSP capacity targets indicated in countries' renewable energy strategies/action plans, the current CSP market remains limited. In an effort to expand the current market, the program will among others assess the potential for hybridizing current and planned power plants taking into account land availability and irradiation levels. It will also look at opportunities to develop a market for small-scale CSP applications to stimulate engagement of small and medium enterprises and in some niche markets such as desalination.
- **Technology & know-how transfer:** There are two areas where TA needs for knowledge transfer were identified: (1) project development and preparation, including tendering process and due diligence and (2) development of local related services and manufacturing.. In particular, the program will facilitate business cooperation between regional and international CSP industry players and provide training targeting low-skilled workforce and college/university students.
- **Regulatory, policy, and institutional framework:** Successful experiences in industry development in MENA have highlighted the importance of a conducive business environment.

A 2011 survey of international CSP industry players revealed a number of business development constraints including a lack of reliable legal framework for contract enforcement, customs duties, and security concerns. Also, potential local CSP component manufacturers face financial constraints—lack of low-interest loans and/or government guarantees—to upgrade manufacturing processes. An enabling legal, regulatory, and financial environment for doing business should be fostered in the short to long term. The program will assess the current framework and propose options for discussion.

IV. Program description

During discussions with countries participating countries in the MENA CSP IP and consultations with representatives of country agencies and industries, interest was expressed for assistance in a number of areas including: (i) development of roadmaps/strategies for attracting major CSP equipment and services players, (ii) support to prepare bidding documents for CSP plant development, (iii) just-in-time advisory services through the establishment of a roster of consultants, (iv) capacity strengthening of research centers,, (v) knowledge exchange and (vi) various technical and economic studies to explore alternative CSP applications, including industrial steam and hybrid schemes. To meet those needs, the program will provide a package of support organized under four pillars: (1) CSP industry support, (2) cooperation and capacity building, (3) market development, and (4) enabling framework. The CSP industry support and the cooperation & capacity building pillars will primarily facilitate technology and know-how transfer, whereas the market development pillar and the enabling framework pillar will mainly seek to expand the CSP market (large-scale power plants and small-scale applications) and address barriers to attracting private sector investments. Given the time span of the program implementation and rapidly-changing social and political environments, some program activities might be adjusted to respond to new country needs/priorities as they arise during implementation. The program will be conducted jointly by the World Bank and the African Development Bank in coordination with key CSP-related country agencies as detailed in the relevant section of this document.

Pillar 1: CSP Industry Support (World Bank implemented)

The pillar will provide support in two areas: (1) CSP deployment through market sizing and assessment, business model identification and tendering process implementation and (2) development of CSP related industries and services. Support will be provided to help selected CSP industry segments improve the quality of products and services. The support will consist of just-in-time assistance and seed funding to encourage innovation.

Component 1: Just-in-time assistance

The assistance will be provided by a roster of international experts/consultants that will be mobilized upon decision of a regional panel. The assistance will involve:

- Choice of business model and development of tendering process. A number of countries have expressed interest in using the expertise developed by Morocco to use the PPP approach for large scale CSP deployment and benefit from the expertise in preparing bidding documents. A roster of highly qualified technical, economic, legal and financial experts can be shared to

support the transactions.

- Mapping existing and potential CSP component manufacturers and service providers as well as small and medium enterprises capable to engage in production of small-scale concentrated solar technologies for industrial applications in each participating country. The mapping will be accompanied by the development of a database booklet that could be made available to chambers of commerce, national institutions in charge of CSP development, and international CSP industry players.
- Assessing production capabilities and developing upgrade plans: Based on demand, experts will (i) assess the feasibility to upgrade production processes or add new production lines for manufacturing CSP flat mirrors, higher quality mounting structures, electric & electronic equipment, and other potential components as well as (ii) develop upgrade plans. The plans may include recommendations related to technology transfer (through acquisition of licenses) and quality improvements.

Component 2: Small grant program

To help stimulate innovation and business development, small grants will be awarded to competitively selected proposals. Expected proposals include: (i) licensing, (ii) quality standards certification, (iii) R&D small-scale pilots from joint academia-research institutions and industries, (iv) joint-venture proposals and (v) other innovative proposals from start-ups. The program could be implemented at country level (to leverage country funding for similar initiatives and contribute to sustainability) or/and at regional level. It could be implemented in partnership with WBI's Development Marketplace Unit, which has a proven track record in managing small grants. WBI may help set up the competition platform, organize the grant award ceremony, help prepare grant agreements, monitor grantees' activities, and document results, outcomes and lessons learned.

Pillar 2: Cooperation and capacity building (AfDB implemented)

The pillar will help enhance regional and international CSP industry cooperation, facilitate information sharing & knowledge exchange between national CSP development agencies, and strengthen capacities. It will provide platforms for discussing challenges & potential solutions and for networking, which could possibly lead to business cooperation or partnerships between MENA CSP technology manufacturers/service providers and key international CSP industry players. The pillar will also design and deliver training. The following components are envisioned:

Component 1: Cooperation & Knowledge Exchange

Cooperation & knowledge exchange will be facilitated through:

- **Regional CSP industry workshops:** Two regional CSP workshops will be held to bring together representatives from MENA CSP supply chain industries, agencies leading CSP project development, and ministries of energy and industry promotion to discuss issues related to market development, local industry integration, support mechanisms and develop action plans that can be later funded.

- **Business fairs:** Two business fairs will be organized in close collaboration with country renewable energy agencies to facilitate networking between international and regional industry players (EPCs and producers of mirrors, mounting structures, and electric & electronic equipment, SMEs on small-scale applications). Topics to be discussed include acquisition of licenses, quality assurance and standards, subcontracting requirements, joint ventures development, establishment of subsidiaries companies, and on-the job training opportunities.
- **Knowledge exchange:** To inform the development of CSP power plants, knowledge exchange events (including study tours) will be supported to allow CSP implementing agencies to be informed of latest developments, learn from each other and from other experiences worldwide (UAE, Saudi Arabia, Spain, United States, etc.)

Component 2 : Capacity building

To provide a skill base that will be able to support a potentially flourishing CSP market in MENA, this component will contribute to strengthening the capacities of the vocational workforce and university students, and provide opportunities for training of graduates. This will involve:

- Assessing the knowledge domains related to solar technologies that are currently supported by the national education systems (vocational, colleges and universities) and training facilities, and identifying the gaps in those systems.
- Designing, in collaboration with industries, CSP/solar-related knowledge domains and courses that could be integrated in the various education systems from vocational schools to engineering and master programs of universities.
- Identifying know-how weaknesses in existing and potential CSP supply chain industries (using information from the industry mapping); and assessing the capacities of relevant national training facilities and higher education institutions to integrate and deliver CSP-related training to industries.
- Developing and providing a package of training tailored to different types of industry workforce, based on capacity gaps
- Developing a “train the trainers” program to expand capacity to non-selected industries and train potential trainers.

Pillar 3: Market development (World Bank implemented)

The pillar aims to expand the CSP market by stimulating the development of a pipeline of CSP projects for power generation and by exploring potential for small-scale concentrated solar applications that could be deployed for industrial processes, enhanced oil recovery, small-scale water desalination. With gas shortages expected in certain countries, industries have expressed strong interest in displacing gas by solar technologies for producing process heat, and governments in adding CSP field to existing and planned power plants. For instance, Tunisia is developing a national program to scale up the dissemination of concentrated solar technologies, following a preliminary

assessment that revealed significant demand from textile and chemical industries. In Morocco and Egypt, small-scale CSP pilots for process heat and water desalination were recently funded. In Egypt, option to hybridize current power plants with CSP is being considered. To tap into this prospective market, which holds a potential for local manufacturing, and to respond to specific country requests related to CSP market development, the pillar will consist of the following:

Component 1: Small-scale concentrated solar technologies

A regional study will be conducted to assess the market and manufacturing potential for small-scale concentrated solar technologies in participating countries. The market assessment will cover industries using heat for their processes, such as oil refineries or desalination plants, and other small-scale applications. Based on the assessment findings, the component will provide country-level support such as designing a national program to promote small-scale CSP applications in industries in Tunisia and other interested countries. The design will involve the identification and proposition of financial mechanisms/incentives to be put in place to incite demand and local manufacturing (since small-scale applications may not attract interest from international CSP industry).

Component 2: Power plant hybridization

A regional study will be conducted to assess the potential for making existing and planned power plants hybrid using CSP in a number of countries including Egypt and Tunisia. The study will take into account land availability, irradiation resource, and cost reduction potential (compared with a full CSP power plant). It should be noted that such an upstream regional study is not yet planned under current country project preparation grants (PPGs). The study will, therefore, pave the way for identifying CSP project areas to be later considered in the investment plan. The study findings will be disseminated in a number of countries and further support will be provided to develop a robust pipeline of hybrid CSP plant projects.

Component 3: Planning and Strategies

Planning related to market development and/or related industry development will be supported on a demand basis. The following requests are being considered:

- Development of action plans/ industry integration strategy of CSP technologies in Algeria
- Development of power purchase agreement in Libya
- Development of bidding documents in Jordan and Egypt, etc...
- Sector strategy and choice of business model in Egypt and Tunisia

Component 4: Regional integration

Regional integration has several benefits for CSP large-scale deployment. Integration of renewable energy technologies into a large regionally integrated electricity system is easier than in small fragmented national market. CSP plants are usually large scale and their values will be maximized when markets are regionally integrated and strongly connected. The TA will provide support for regional integration in the form of studies on the benefits of developing better interconnections for regional integration and of grants for regional project preparation, such as interconnections with Europe or between Libya and Tunisia.

Pillar 4: Enabling Framework (AfDB implemented)

The pillar seeks to address barriers to doing business in the region by promoting a legal, regulatory and financial framework that is more favorable to business development. The following two groups of activities are foreseen:

- **Financial support schemes:** To help international CSP industry players invest in setting up local companies and start-ups engage in the CSP supply chain, improving the business environment will be critical. A study will be conducted to identify and propose required investment support schemes. It will look at various options including: (i) provision of low interest loans, (ii) raising awareness of financial institutions, (iii) tax credit/deductions, and (iv) custom duties, and (v) government guarantees. The study will be shared with industry representatives and relevant government institutions in an effort to develop an agreed financial support plan that can be later implemented.
- **Streamlining of regulatory and policy framework:** a study will be conducted to assess legal and regulatory gaps for large-scale deployment of CSP and to propose policy recommendations. The study will also investigate the coordination between industrial development and energy policies for the purpose of promoting local solar supply chain industries.

12. Assessment of the Proposed Technical Assistance (TA) Program with CTF Investment Criteria

Potential for GHG Emissions Savings and technology development status

The proposed TA program contributes to reduce GHG emissions through its linkage to the MENA CSP IP. The program supports objectives stated in the MENA CSP IP, which aims at bringing down the global costs of CSP technology through economies of scale and learning effects from replication by financing the development of 950 MW of CSP plants. The projects are expected to avoid over 1.5 million tons of CO₂ emissions per year from the energy sector of the countries over 20 years.

In addition, the implementation of the program has the potential to save GHG emissions by promoting the use of concentrated solar technologies instead of natural gas/fossil fuels for certain industrial applications. The program promotes the deployment and adoption of small-scale concentrated solar technologies (CSP), which uses sun irradiation (instead of natural gas and fossil fuels) to produce heat and steam for industrial processes. Adoption of CST will displace natural gas and other fossil fuels that are currently used in several industries to produce steam and hot water for processes. Also, power plant hybridization with CSP, which is supported by the program, will further save GHG emissions by reducing the quantity of natural gas and fossil fuels used for power generation.

Small, medium and large-scale concentrated solar technologies, promoted by the TA program, are mature. Small-scale CST have been deployed for process heat in pharmaceutical, dairy, food industries; enhanced oil recovery in oil refineries, water desalination in some industries. Medium and large-scale CSP (parabolic trough, solar tower) are already in function or planned in some MENA including in Algeria, Egypt, and Morocco.

Cost-effectiveness³

Given that the TA program supports the adoption of CSP technology in participating MENA countries, estimates for cost-effectiveness indicators will be provided for investment projects put forth for CTF co-financing under the MENA CSP IP.

Nonetheless, it is expected that the proposed TA program would contribute to reduce CSP technology costs and therefore enhance the cost-effectiveness of CTF co-financing per ton of CO₂ emissions avoided. The market expansion pillar of the program will help strengthen the CSP market for power generation by including hybridization, and expand the power generation market to consider concentrated solar technologies for process heat and enhanced oil recovery. Such market expansion efforts will ultimately be translated into larger scale production of CST, which would contribute to cost reduction of CSP technologies.

Demonstration Potential at Scale

The TA program complements the MENA CSP IP, which aims at scaling up the deployment of CSP in the region through its replication potential. The TA will help lay down the foundation for scaling up CSP technologies by addressing sector-wide weaknesses such as unattractive regulatory and policy framework, lack of financing from regional banks, and lack of capacity and know-how.

In particular, the program promotes scalability and replicability, which contribute to demonstrate potential at scale. For instance, the implementation of the small grant program in close collaboration with national renewable energy agencies and industry promotion entities will demonstrate that industry promotion approaches can be successfully applied in the energy sector to deploy clean technologies, while generating new local jobs. The expected success will lead to enhanced competitiveness of industries and greater government support to further deployment of CST, which will eventually help catalyze replication of investments in solar CST and reduce GHG emissions at the regional and global level. Similarly working together with universities, colleges, and government training institutions will ensure scalability and continuity of education and training efforts to sustain the growth and improvement of CSP deployment. Also, some market development activities of the program are likely to be followed up with investment programs. Tunisia is very keen to build on the findings of CST deployment potential to develop a national CST deployment program, along the approach of the PROSOL program, which successfully disseminated solar water heating systems.

Development Impact

As already pointed out, the TA program will contribute to achieve the development impacts expected from the IP implementation, including energy security, local industry development and job creation. By promoting (i) hybridization of conventional power plants running on gas and other fossil fuels and (ii) deployment of concentrated solar technologies in industries for process heat/steam, the program will significantly displace the use of fossil fuels and natural gas that are either imported or highly subsidized. This will, therefore, enhance energy security of participating countries. In addition, the program will provide existing and potential MENA CSP industries with a package of assistance to help them acquire advanced production technologies and know-how, which will improve their

³ For reference: CTF Co-Chairs Summary, Agenda Item 8, Cost-Effectiveness of CTF Projects, pp.4-5, October 2013. https://www.climateinvestmentfunds.org/cif/sites/climateinvestmentfunds.org/files/Summary_of_Co_Chairs_CTF_TFC_October_2013_final.pdf

competitiveness and production, and lead to job creation as well. For instance, under a 1 GW scenario in MENA, job creation is estimated to be in the range of 25,900 jobs by 2020. Other positive developmental impacts include building the capacity of the existing and future workforce in MENA that will be specialized in a RE technology niche and the related manufacturing and services.

Implementation Potential

As explained under the implementation arrangements section, country renewable energy, industry promotion, and education agencies and institutions will be closely involved over the implementation of the TA program. Key representatives for those country agencies/institutions will be selected to form a regional implementation group that will participate in day-to-day program implementation. A significant number of program activities are services provided directly to targeted beneficiaries (CSP supply chain industry, national renewable energy and industry promotion agencies, universities, colleges and other training facilities). Some activities seeking to improve the policy, regulatory, financial and business frameworks would require follow-up actions by country governments to yield expected outcomes. The prospect of follow-up actions is probable given that they will support the achievement of country targets. For example, Algeria has a CSP target of 1500 MW by 2020. Morocco targets 2000 MW of installed solar capacity by 2020, Egypt 3500 MW by 2027, Jordan 600 MW by 2020, and Tunisia 1700 MW by 2030. The TA will, then, help MENA to realize its medium-to-long term solar energy ambitions.

13. Stakeholder Engagement

Although the TA program will be implemented by the MDBs, continuous engagement and coordination with the various country stakeholders is paramount for its implementation and success. The Project will engage with stakeholders at various levels:

At the Governmental Level:

The TA program will be implemented in close collaboration and coordination with national renewable energy agencies and institutions in charge of industry development in the beneficiary countries, including:

- Algeria: Ministry of Energy and Mines, and Ministry of Industry (in charge of industrial promotion)
- Egypt: New and Renewable Energy Authority, and Industrial Modernization Center,
- Jordan: Ministry of Energy and Mineral Resources, and National Electric Power Company (NEPCO)
- Libya: Renewable Energy Authority of Libya (REAoL)
- Morocco: Moroccan Agency for Solar Energy (MASEN), National Agency for Renewable Energy and Energy Efficiency (ADEREE), Ministry of Energy, Mines, Water and Environment and Ministry of Industry, Commerce and Investment
- Tunisia: National Agency for Energy Conservation (ANME), the national utility STEG and Ministry of Trade and Industry (also responsible for energy)
- Regional and Global: Regional Centre for Renewable Energy and Energy Efficiency (RCREEE)

In addition, certain activities will also need engagement with the ministries of education and higher education, and engineering universities and technical colleges on aspects related to skills capacity building and streamlining of solar-related curricula in the vocational and higher education. The program will also work with the national electricity regulators on issues concerning the regulatory and policy frameworks related to solar energy.

Key representatives from those agencies/institutions will be drawn to set up a Regional Implementation Group (RIG). The RIG will be involved in day-to-day implementation tasks such as drafting TORs, recruiting consultant firms, mobilizing international experts, and organizing workshops/business fairs.

At the Private Sector Level:

The private sector will be involved during the program implementation. The targeted private sector include CSP-related industrial facilities, industry and business associations, universities and training facilities, engineering firms and local financing institutions and investment funds that could potentially provide the innovative financing mechanisms needed to support solar energy development in MENA.

The TA will build on numerous programs in place or under preparation in the concerned countries (in particular Morocco) with support of the World Bank and other development partners. World Bank empirical and analytical work at the sector level corroborates that close collaboration between governments and the private sector offers great potential for defining opportunities and removing binding constraints related to factors for building competitiveness such as skills and capability development, access to technology, access to financing, a supportive tax and regulatory environment and industrial infrastructure. Examples have shown that the market forces are much more important than any local or political consideration. Dialogue platforms thus require an inversely proportional effort to the level of development of the sector in question as compared to key competitors. The more ground a sector has to gain, the more efficient and fast its public-private dialogue (PPD) will have to be in order to define and act upon the actions and reforms that will fill key gaps in financing, regulation, skills, infrastructure and technology.

At the Development Partners level:

Several other development partners are either already supporting solar energy development in MENA or are planning certain interventions. For instance, Germany, through GIZ, is currently active in Egypt, in Tunisia and in Morocco on maximizing the developmental impacts of solar energy applications through local manufacturing. The program will coordinate with those development partners and as possible try to create synergies with their interventions in order to maximize the overall impact and ultimately provide significant momentum for scaling-up CSP deployment in the region.

The program will also team up with partners, such as the World Bank Institute, that have developed large training and capacity reinforcement programs. Some renewable energy programs have been developed by networks of universities and innovation centers, such as IRENA, Masdar and MIT.

Other organizations, including regional think tanks such as the Regional Centre for Renewable

Energy and Energy Efficiency (RCREEE), IRENA and NGOs (e.g. the Solar Energy Development Association in Egypt) will also be engaged during the implementation of the TA program. For example, RCREEE with its long experience and direct engagement with the renewable energy sectors in all the countries of MENA is very well positioned to assist the program in identifying the main gaps to be addressed.

14. Gender Considerations

The program will strive to incorporate gender considerations where relevant. The delivery of training to industry workforce will include criteria to enhance women involvement. The selection of universities, colleges that will benefit from support to integrate CSP/solar courses will embed incentives to encourage women enrollment in technical/engineering programs. Similarly, the small grant program will comprise incentives to stimulate women entrepreneurship.

15. Indicators

As indicated above, the TA program contributes to the achievement of the primary objective of the CTF MENA CSP program, which is to accelerate the deployment of CSP. While the MENA CSP IP will increase CSP generation capacity (expected 950 MW), the TA will address barriers to CSP deployment, providing the necessary foundation for deploying concentrated solar technologies. The following indicators will be used to monitor the program implementation:

Development Objective (DO): to further promote the deployment of concentrated solar technologies in participating MENA countries	
DO indicators	<ul style="list-style-type: none"> ✓ increased number of industries engaged in the CSP supply chain ✓ number of local jobs created
Target	✓ at least 2 to 4 new industries engaged in CSP supply chain
Intermediate Outcome 1: increased capacity of local CSP industries/service providers to produce higher quality CSP components or provide improved services	
IO1 indicators	<ul style="list-style-type: none"> ✓ designed capacity strengthened ✓ number of industries that benefited from training/assistance
Targets	<ul style="list-style-type: none"> ✓ 2 industries acquired licenses or obtained standard certification ✓ at least 2 universities/colleges provide courses on CSP/solar energy ✓ 10 industries received assistance for upgrade plan development ✓ 10 industries received training ✓ 10 industries attended business fairs
Intermediate Outcome 2: deepened knowledge of key country agencies	
IO2 indicator	✓ facilitated exchange of best practices
Targets	<ul style="list-style-type: none"> ✓ at least 4 national agencies reported enhanced knowledge on CSP ✓ 2 regional knowledge exchange events organized for agencies/utilities leading CSP development
Intermediate Outcome 3: informed policies and/or concentrated solar technology deployment program design	
IO3 indicators	✓ concentrated solar technology deployment program design

	informed
	✓ change in government policies/strategies
Targets	✓ the design of, at least, one CST deployment program is informed ✓ at least 1 country initiated the preparation of power plant hybridization project based on the TA-supported study

16. Budget

The overall budget for the MENA CSP TA program is US\$10 million. The proposed activities amounts to US\$9 million; the program design and implementation costs by the multilateral development banks (WB/AfDB) represent five percent of the budget (US\$0.476 million); and a contingency amount of US\$0.524 million is accounted for to cover cost over-runs and to fund potential relevant activities that may emerge over the program implementation. The budget breakdown by pillar is presented below (please see a detailed budget breakdown at the last page).

Pillar / budget items of the MENA CST TA program	Budget
Pillar 1: CSP Industry Support	US\$4,950,000
Pillar 2: Cooperation & Capacity Building	US\$1,750,000
Pillar 3: Market Development	US\$2,150,000
Pillar 4: Enabling Framework	US\$650,000
Program Administration	US\$476,000
Contingency	US\$524,000
TOTAL	US\$10,000,000

17. Project/Program Timeframe

Program disbursement plan by fiscal year (FY) in US\$

Program	FY 2015	FY 2016	FY 2017	FY 2018	Total (US\$)
Pillar 1	1,000,000	1,000,000	2,550,000	1,000,000	5,550,000
Pillar 2	500,000	700,000	300,000	250,000	1,750,000
Pillar 3	300,000	500,000	200,000	50,000	1,050,000
Pillar 4	200,000	250,000	150,000	50,000	650,000
Prog. Admin.	100,000	150,000	150,000	76,000	476,000
Contingency		200,000	200,000	124,000	524,000
Total	2,100,000	2,800,000	3,550,000	1,550,000	10,000,000

Program Milestones	Date
Program Internal Review by MDB (WB)	May 2014
MDB Management Approval Date	Sep/Oct 2014
Program Closing Date	June 2018

18. Other

I. Implementation Arrangements

The program will be implemented jointly by the World Bank and the African Development Bank in coordination with participating country agencies involved in CSP development and industry promotion. The beneficiaries—MENA CSP-related industries, training facilities, and universities – will be closely consulted and involved throughout the implementation. The program has been designed such that each MDB will be responsible for the implementation of two pillars in order to ensure harmonization of the activities within each pillar, avoid duplication and maintain integrity. Nonetheless, the WB and AfDB will ensure coordination at the program level.

Procurement of services and goods under this TA program will follow the World Bank Group Procurement Guidelines⁴ or the AfDB Rules and Procedures (May 2008 Edition, Revised July 2012)⁵ as applicable.

II. Monitoring

The program will be monitored in accordance with WB/AfDB's procedures applicable for trust funded projects. At the concept stage, the program objective, intermediate outcomes, outcomes indicators, indicator baseline values, and targets will be defined and included in the Grant Fund Request (GFR). Over the course of the program implementation, data will be collected to document the indicators and intermediate progress reports will be prepared. At the program closing, an assessment will be conducted to take stock of the program achievements including outcomes. Based on the assessment findings, a Grant Monitoring Report (GRM), which document program outputs, intermediate outcomes and lessons learned will be prepared.

⁴http://siteresources.worldbank.org/INTPROCUREMENT/Resources/278019-1308067833011/Procurement_GLs_English_Final_Jan2011.pdf

⁵ <http://www.afdb.org/en/projects-and-operations/procurement/resources-for-borrowers/policies-procedures/>

MENA CSP TA PROGRAM ACTIVITIES	CTF Funding	CTF Funding Allocation	
		World Bank	AfDB
PILLAR 1: CSP INDUSTRY SUPPORT	\$4,950,000	100%	
Component 1: Just-in-Time Assistance	\$950,000		
I.1.1 Mapping of existing/potential CSP/CST manufacturers - booklet	\$350,000		
I.1.2 Assessments & development of upgrade plans	\$600,000		
Component 2: Small grant program (recipient-executed)	\$3,500,000		
I.2.1 Small grant program (recipient-executed)	\$3,000,000		
I.2.2 Preparation of small grant program (WBI or ETC)	\$500,000		
PILLAR 2: COOPERATION & CAPACITY BUILDING	\$1,750,000		100%
Component 1: Industry Cooperation & Knowledge Exchange	\$625,000		
II.1.1 Regional CSP industry workshop (2)	\$175,000		
II.1.2 Business fairs (2)	\$300,000		
II.1.3 Knowledge exchange - implementing agencies (2)	\$150,000		
Component 2: Capacity building	\$1,125,000		
II.2.1 Gap assessment for education systems	\$225,000		
II.2.2 Gap assessment for industries	\$200,000		
II.2.3 Design of package of training (including "train the trainers")	\$700,000		
PILLAR 3: MARKET DEVELOPMENT	\$2,150,000	100%	
Component 1: Small-scale concentrated solar technologies	\$550,000		
III.1.1 Regional study with country cases	\$250,000		
III.1.2 Program design for Tunisia	\$300,000		
Component 2: Power plant hybridization	\$600,000		
III.2 Potential for hybridization of existing/planned power plants	\$600,000		
Component 3: Planning and strategies	\$500,000		
III.3.1 Roadmaps/Action plan/Sector strategies	\$150,000		
III.3.2 Development of Power Purchase Agreement (request from Libya)	\$350,000		
Component 4: Regional Integration	\$500,000		
Studies to facilitate the development of interconnection networks	\$500,000		
PILLAR 4: ENABLING FRAMEWORK	\$650,000		100%
IV.1 Legal, regulatory and Policy framework	\$250,000		
IV.2 Financial support schemes	\$400,000		
Program administration	\$476,000	50%	50%
Contingency	\$524,000		100%

TOTAL PROGRAM BUDGET	\$10,000,000	\$6,838,000	\$3,162,000
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