I. Introduction and Context

Country Context

1. Introduction and Context

Global Context

1. Concentrated Solar Power (CSP) is a non-carbon technology of particular interest to utilities as production is more predictable than for most renewable energy options. It also offers substantial cost-reduction potential, which will be dependent upon manufacturing scale effects, learning curve effects and improvements in technology. The Middle East and North Africa (MENA) region has the potential to become a major supplier and consumer of CSP generated electricity, as well as a world scale supplier of components for CSP power plants. The region has a major comparative advantage for CSP because of its climatic conditions and proximity to premium green energy markets in Europe. It is also home to significant industrial capabilities on which a green manufacturing sector could be built and create jobs.

2. The World Bank is working with the African Development Bank (AfDB) and other donors to accelerate CSP deployment in MENA. The MENA CSP Investment Plan is a USD 5.6 billion program—including USD 750 million from the Clean Technology Fund (CTF)—to finance CSP across the region. The Investment Plan has employment, climate change, energy security and export revenues objectives, as well as the goal of enhancing integration across the Mediterranean.

3. Exports will be essential to the viability of the MENA CSP projects. They will have benefits for both shores of the Mediterranean: helping the EU countries meeting their renewable energy objectives at lower cost, while creating a source of revenues for MENA countries which will pay for the development of an expensive carbon-free technology. The EU regulatory framework is not yet in place to provide certainty and profitability to green electricity exports from MENA, and the interconnection infrastructure is still limited. However, EU imports of green electricity from MENA are likely in the long term. Until exports take off and become a regular and sustained source of revenues for renewable energy plants in MENA, concessional financing is necessary to make the CSP projects happen.

4. The MENA CSP Investment Plan has strong synergy with other initiatives that seek to develop the renewable potential of the Mediterranean Basin, while creating the conditions for a regional market linking the North and the South of the Basin to optimize resource use (namely the Mediterranean Solar Plan, Desertec, Medgrid and the World Bank’s Arab World Initiative).

Country Context

5. In December 2010, Tunisia experienced a wave of protests that led to the toppling of the previous regime on January 14, 2011. The "Jasmine Revolution" was fueled by a lack of social, economic and political opportunities, and exacerbated by anger over the misgovernance that favored insiders. The 2011 protests highlighted how, despite good economic growth, many challenges persisted in addressing economic, social and regional inequalities. Tunisia’s macroeconomic performance has been consistently positive in the past years, including in 2009 and 2010 in the aftermath of the global financial crisis, thanks to macroeconomic stability coupled with a gradual opening to trade and foreign investment. However, unemployment remains high, regional disparities are marked and a large part of the population experiences a sense of missed opportunity and exclusion from the economic and social progress of the country.
6. Until the late 1980s, Tunisia was characterized by an energy surplus. Since the early 1990s, this surplus has turned into a deficit, and Tunisia has been a net importer from 2001 on. The country’s primary energy demand is nearly entirely based on oil and gas, and its electricity production on gas only. This is a source of concern, as the high level of dependency on hydrocarbons makes the country vulnerable to disruption in the international oil and gas markets and to price volatility, especially as Tunisia has to rely increasingly on imports. The current 50 MW CSP project would be a first industrial scale demonstrator for solar based power generation in Tunisia, which would pave the way for further initiatives, both from the public and private sectors.

7. Beyond energy, climate change has emerged as a major challenge for all sectors in Tunisia, and several programs have been launched for climate change mitigation, including the Tunisian Solar Plan. Based on this plan, Tunisia expects to save 10 million tonnes of oil equivalent (toe) of fossil fuels over the period 2005-2030 from the “business-as-usual” scenario, 80% through energy efficiency and 20% through renewable energy.

Sectoral and Institutional Context

8. Rational use of energy has been a priority in Tunisia for a long time. The 11th Development Plan (2007-2011) sets the broad direction of energy policy, including gradual reduction in energy subsidies and scaling up of investments in energy efficiency (EE) and renewable energy (RE).

9. The Tunisian Solar Plan was launched in December 2009 for the period 2010-2016 and aims at increasing the share of RE and EE: 40 projects, which will also be part of the Mediterranean Solar Plan, have been identified in solar, wind, biomass, etc., for a total investment amount of EUR 2 billion, 70% of which to be provided by the private sector. Tunisia proposed four projects in the MENA CSP Investment Plan, for which US$ 181 million from the CTF are earmarked: the present 50 MW STEG project, a 50-100 MW private project and two components of the ELMED project, i.e. a 100 MW CSP capacity and a participation in the planned Tunisia-Italy interconnector.

10. Another central feature of Tunisia’s renewable strategy is the development of a local equipment industry to contribute to economic growth and job creation. The 2011 study initiated by the World Bank on the local manufacturing potential for CSP components in MENA confirmed that such potential exists in most countries of the region, including Tunisia.

11. The vertically integrated public utility Société Tunisienne de l’Électricité et du Gaz (STEG) generates approximately 75% of Tunisia’s power. The capacity of STEG’s generation fleet amounts to 3 GW, almost all of which being primarily gas fired. Following a 1996 law reforming the electricity sector, Tunisia’s first independent power producer (IPP), Carthage Power Company, a 470 MW combined cycle gas turbine plant, was commissioned in 2002 and now generates over 20% of the country’s electricity. Regarding renewable energy, STEG has developed several wind farms. A photovoltaic program was launched in 2009, involving the acquisition of 3,000 units of 1 kWp each.

Relationship to CAS

12. The World Bank’s program in Tunisia set out in the Interim Strategy Note FY12-13, with an expected board date of end FY12-. The ISN envisages three areas of engagement: (i) governance and citizen participation, (ii) economic and social inclusion and (iii) laying the foundations for sustained economic growth. These priority areas are designed to foster job creation and all inclusive economic growth, while also remaining committed to the environmental challenges that the country is facing. The World Bank will continue to consult with the client to ensure that the priorities that the new authorities set out are reflected in the ISN. The project will also contribute to the much needed improvement of employability and employment in the country, through creation of green skills and jobs, in constructing and operating the plant, as well as in manufacturing some of its components.

II. Proposed Development Objective(s)

17. The development objective of the proposed project is to support STEG in the development of a 50 MW CSP power plant, to increase power generation from solar energy and mitigate greenhouse gas emissions and local environment impact.

Key Results

18. The key results indicators are CSP capacity installed (in MW), annual CSP power generation (in GWh), avoided local air pollution (tons of NOx, SOx annually), and avoided GHG emissions (tons of CO2 annually).

III. Preliminary Description

Concept Description

15. The project will support the construction and initial operation of a proposed 50 MW CSP plant as part of the Tunisian Solar Plan. It will be a public sector project to be implemented by STEG. The approach being adopted by the company is to go with a size and configuration that will minimize technical risks, while allowing STEG to gain significant expertise in developing, operating and maintaining CSP plants.
16. Site. Two sites were preselected, one near the sea in the Gabès area, the other one inland between Gafsa and Tozeur. The Gabès site was finally selected and the on-site insolation measurement campaign is about to start.

17. Technology and cost. STEG would rather opt for a plant without storage, with gas auxiliary firing (for about 15% of generated power, as is the case in many existing CSP plants in Spain). This and other open engineering options, including the actual generating capacity, are currently being reviewed by Lahmeyer, who is preparing a feasibility study. The technology of choice is likely to be parabolic trough. The project cost is currently estimated around USD 200 million.

18. Financing. The feasibility study under way by Lahmeyer is financed by the Neighbourhood Investment facility (NIF) under leadership of KfW. This donor is also interested in financing the project, as are the African Development Bank, the World Bank and other institutions (EIB, AFD, IsDB, etc.). STEG will also be seeking to collect revenues from CO2 emission reductions (about 70,000-75,000 tons per year, based on expected generation of 130-140 GWh per year).

19. Timetable. The expected timetable is as follows:
   a. Feasibility study: May 2011-November 2012 (draft conclusions, including site selection and preferred engineering options: early 2012)
   b. CTF presentation: March 2012
   c. World Bank appraisal mission: May 2012
   d. World Bank approval: end October 2012
   e. Selection of contractor: Q2 2013
   g. Commissioning: June 2015

IV. Safeguard Policies that might apply

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V. Tentative financing

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VI. Contact point

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