

Annex 2

ACTION FICHE OF THE WECSP PROJECT

1. IDENTIFICATION

Title	Capacity-Building in Wind Energy and Concentrating Solar Power (WECSP) in Jordan		
Total cost	10 M Euro		
Aid method / Management mode	Decentralised management		
DAC-code	23030	Sector	Energy

2. RATIONALE

2.1. Sector context

Wider exploitation of renewable energy (RE) sources is a key priority for Jordan. Along with energy efficiency, the development of renewable energy sources is part of Jordan strategy to meet the increasing energy demand, enhance its security of energy supply, develop new activities for local industries and services and promote economic and social development. Jordan is relatively poor in indigenous energy resources and therefore largely (97 %) dependent on imports, which constitute a considerable economic burden. In 2007 expenditure on energy imports accounted for almost 19.7% of gross national product. Jordan is looking on diversification of its energy supply and promotion of its local resources and is currently exploring oil shale, nuclear energy, wind and solar resources.

In Jordan, generation, transmission and distribution of electricity are regulated by the “Temporary” Electricity Law of 2002. The regulation of the sector is done by an Electricity Regulatory Commission (ERC). An Energy and Minerals Law encompassing electric energy, minerals, petroleum, energy efficiency and renewable energy, and including a Jordanian Renewable Energy and Energy Efficiency Fund (JREEEF)⁸, has been drafted and is still in discussion at the Energy Commission at the Parliament. Its approval is expected in 2009.

Electricity is generated by private companies with a total capacity of 2,160 MW, including a first Independent Power Producer (IPP) of 380 MW which started its operations in 2008. A second IPP of 400 MW is expected to fully operate in 2011. The National Electric Power Company (NEPCO) is the entity responsible for procurement of generation from producers, transmission, dispatch, sale to the private distributors and a few large industrial customers and trade with neighbouring partners (Egypt, Syria and Palestine).

Renewable energy sources have barely been tapped into for the generation of electricity. According to the National Energy Strategy, Renewable Energy Source must represent at least 10% in the primary energy mix in 2020. To achieve this,

⁸ Government of Jordan already allocated 1.5 MJD for 2008-2009 and 2 MJD for 2010 to the JREEEF

1,200 MW of renewable energy will come on pipeline projects through wind (600 MW) and solar energies (600 MW). So far, the total installed capacity of wind power is only 1,620 kW whereas there is no power generation from solar. New developments include the selection of three sites to implement wind energy projects under BOO (Build-Operate-Own) arrangements with a total capacity of around 300 MW.

The proposed project seeks to build the capacities of the beneficiary as well as a national technical team in the fields of wind energy and Concentrating Solar Power (CSP) development. It is designed as a project approach based on the expected outputs which include technical assistance, building capacities and supply of relevant equipment for the proposed wind testing facility and CSP pilot plant. It is in line with the National Energy Strategy for Jordan and will facilitate the implementation of the renewable energy part of the strategy. Accordingly, the project is compliant with the key principles of the Paris Declaration and EU commitments on development.

2.2. Lessons learnt

Many initiatives in the MEDA countries have recently emerged in favour of the exploitation of the huge wind and solar energy resources in the region.

DESERTREC, a voluntary association formed in 2003 as Trans-Mediterranean Renewable Energy Cooperation (TREC), as an initiative of the German association of the Club of Rome and the Hamburg Climate Protection Foundation, promotes an increase of Europe's energy supply and a reduction of its CO₂ emissions by campaigning for renewable non-polluting electric power transmission to Europe from solar and wind power stations in the deserts of the Middle East and North Africa.

It was identified that the region's RE potential lies mainly in very favourable solar resource conditions as well as its suitability for accommodating large-scale solar facilities. A combination of solar, as well as other appropriate RE technologies such as wind, could provide a long-lasting solution to the mentioned challenges if deployed on a large scale within the MENA region. Furthermore, the benefits of mass RE deployment could facilitate further economic development in Mediterranean countries, if complemented by the creation of a Euro-Mediterranean green electricity market. In line with the latter, the European Commission adopted in January 2008 a proposal for a Directive on the promotion of the use of energy from renewable sources which provides an opportunity for further development of electricity exports from renewable energy sources from the developing countries to the EU. It has however been acknowledged that major growth in electricity production from renewable sources will require an associated increase in the capacity of transmission networks.

2.3. Complementary actions

The Mediterranean Solar Plan (MSP) of the Union for the Mediterranean is expected (i) to develop RE in the region at a scale of implementation capable in the first place to contribute significantly to cope with the increasing energy demand in the Mediterranean Partner Countries (MPCs) and (ii) to contribute to developing an integrated "Euro-Mediterranean electricity market", both for satisfying the MPCs' own electricity needs with renewable energy sources (mainly solar), and potentially to export part of the electricity produced with renewable energy sources to consumer countries, including the EU.

This project will benefit from the Jordanian/Greek twinning partnership project currently in execution under the European Neighbourhood Policy on “Capacity Building of the National Energy Research Centre (NERC)”. This 18 month project which started in 2008 aims at enhancing NERC’s overall administrative, operational and expert institutional capacity to meet the country’s energy challenges and to assist Jordan in meeting its commitments under the EU-Jordan Association Agreement. Among others, the twinning project is building NERC capacity in the wind energy field.

The "Middle-East and North Africa Renewable Energy Conference" (MENAREC) and the Cairo-based "Regional Centre for Renewable Energy and Energy Efficiency" (RCREEE) have been advocating the development and dissemination of solar and other RE sources in the region, as part of their mandate. The project will maintain a close relationship with other bodies and activities currently ongoing, such as the MED-EMIP⁹ programme, which has started in January 2008; the MEDA Solar Plan, which is in its initial steps; the “MENA Regional Centre of Excellence on Renewable Energy and Energy Efficiency” (MCREEE), supported by Denmark and Germany; the MEDENER- “Mediterranean Association of the National Agencies for Energy Conservation”; and the “Mediterranean Renewable Energy Centre” (MEDREC), supported by the Italian Government and UNEP.

The European Investment Bank, which has decided to raise in the coming years up to 50% the share of EE and RE in its energy portfolio and intends to develop credit lines, public-private partnerships and other financial instruments dedicated to those areas, should offer opportunities for complementary actions. Continuous contacts will be maintained by EC Delegation to Jordan with EC HQ and other EC Delegations in order to ensure regular exchange of information.

2.4. Donor coordination

This initiative was presented to EU Member States and is in line with the Jordan Country Strategy Paper (2007-2013), which foresees the importance of the renewable energy sector in Jordan and with the National Indicative Programme (2007-2010), which identifies as potential energy project the development of renewable or alternative energy sources and the sustainability of the development process.

This measure is in line with the EU plans to have the Renewable Energy share of the energy mix increasing to more than 20% of the energy mix by 2020, and with Jordan plans to reach around 10% by the same year. Furthermore, such promotion of renewable energy sources in Jordan will help reduce greenhouse gas and other pollutants emissions by generating electricity from renewable energy power plants instead from fuel-fired power plants.

The proposed project integrates the main principles of the Paris Declaration and EU commitments on development by providing capacity-building assistance through coordinated programmes, including a multi-donor special working group, established by the Ministry of Planning and International Cooperation (MoPIC).

Close collaboration with international donors and financing institutions (with an emphasis on clean technology funds), utilities and other EC-funded initiatives will be sought systematically to increase aid effectiveness. In particular, the WECSP project

⁹ MED-EMIP is the acronym of the MEDA regional project: “Support for the Enhanced Integration and the Improved Security of the Euro-Mediterranean Energy Market”.

will follow the initiatives of the Agence Française de Développement - AFD (which allocated a 40 M Euro credit line channelled through local banks) and the Global Environment Facility - GEF (which is implementing a US\$ 6 million Renewable Energy Market Development assistance programme).

The Kyoto Protocol's flexibility mechanisms will also be tapped, whenever possible, to make RE investments in the renewable sector more attractive.

3. DESCRIPTION

3.1. Objectives

The overall objective of this project is to support the rational and sustainable use of alternative energy resources in Jordan.

The specific objective of the project is to support the National Energy Research Centre (NERC) to steer and facilitate the implementation of the Jordanian Government Renewable Energy Strategy 2007-2020 by installing and testing a wind testing facility and a Concentrating Solar Power (CSP) pilot plant and by helping the country build up local and regional expertise in the field.

3.2. Expected results and main activities

The project specific objective will be achieved through: (i) demonstrating feasibility and reliability of pilot wind testing facility and CSP pilot plant installed under the project and operated by the NERC, including sale of power output to the grid; (ii) developing testing and calibrating means as well as training capabilities at the NERC to support Jordanian and other regional partners and developers in the field; (iii) enhancing awareness and capacities in Jordan on wind and CSP technologies and benefits; (iv) contributing to the implementation of the Jordan Renewable Energy Strategy and (v) contributing to the mobilisation of financial means for further developing RE initiatives in the country by building up a better understanding of the technologies and economic benefits at stake.

- As regards pilot installations, the project will select the appropriate technological options to be procured and implemented at the project site and validate the site location for the CSP pilot plant, taking into account the objective of testing several proven and reliable technologies with high potential of replication in Jordan within the limit of the budget allocated for equipment (see Section 4.3.),
- As regards testing, the project will build NERC capacity in the fields of: testing, certification, construction, state-of-art industrial processes in relevant areas such as wind testing facility and CSP pilot plant installations,
- In the field of awareness and capacities, the project will take advantage of the pilot installations and testing facilities to demonstrate and promote the reliability and potentials of the selected wind testing facility and CSP pilot plant technologies,
- The project will contribute to implement the Renewable Energy Strategy through: (i) better access to information on good practices in all related domains and, (ii) better understanding of economic and financial issues related to adoption of RE technologies, through financial and economic cost/benefit analyses of different RE technologies (from the perspective of the individual investor and at national level), identification of changes in RE regulations and standards required to

facilitate widespread adoption of relevant technologies, identification of market opportunities and potential sources of financing, implementation of demonstration projects, and development of industrial and commercial contacts; and (iii).increased number of skilled engineers and technicians,

- As regards financing, the development of local expertise in technologies, operation, testing of wind and solar facilities will increase confidence of international and local financial institutions and will help develop partnerships with international organisations.

Project activities will include:

- Preparing the detailed project work plan to specify the activities that should be executed by the project, Defining with NERC the human resources required to implement the project (local staff, TA experts);
- Based on the proposed wind testing facility and CSP pilot plant technologies and the expected power output, discussion and negotiation with the potential buyers (NEPCO or distributor) for resale of the wind and solar electric production, including technical requirements for the connections;
- Identifying the technical specifications of the wind testing facility, the CSP pilot plant, the electrical equipment (connections, sub-stations) to be procured, installed and executed under the contract. Preparing the layout of the wind testing facility and CSP pilot plant with all infrastructure needed;
- Identifying the detailed specification of the equipment to be procured, installed and utilized in the testing laboratory currently under construction.
- After procurement following EC procedures, installation of the RE systems and of the testing equipment, installation of electric equipment for connection to the grid. The wind testing facility and the CSP pilot plant equipment and the associated works will be procured through supply contracts which will include a significant training component, so that NERC staff is fully involved in all steps of installation and start up;
- Preparing, organizing and executing a training programme for selected engineers and technicians from NERC on testing and certification practices and procedures on wind turbines and CSP technologies, in particular at manufacturers' laboratories and international testing stations;
- Conducting financial and economic analysis related to adoption of RE technologies, and identifying key regulatory issues facilitating their adoption
- Preparing training courses curriculum for engineers, technicians and university students on wind turbine, solar power and possibly other RE technologies. These courses are expected to be delivered by the beneficiary. Part of the curriculum is expected to be prepared during the on-going twinning project under implementation in cooperation with CRES from Greece;
- Preparing communication material for awareness raising on the potential, the benefits and the feasibility of wind and CSP technologies installed. Dissemination towards agencies, utilities, universities, industrialists, developers, banks, etc.

The main project outcomes should be:

- Increased use of RE sources in Jordan with the consequent reduction of dependency on imports of traditional sources of energy, namely oil and natural gas,
- Increased investments in the wind and solar sector with significant involvement of local developers, companies and service providers,
- Reduction of greenhouse gas emissions,
- Practical installation and operation of a wind testing facility with different technologies and a concentrated solar power pilot plant supplying the HV or MV voltage network through a Power Purchase Agreement to be signed with the buyer,
- A laboratory with testing equipment for wind and solar technologies is established and fully operational and accredited,
- The wind and solar database is fed with data and information collected from the site,
- Increased institutional /administrative capacity of the NERC and technical expertise in Jordan,
- Increased public awareness of RE potentials, specific communication to potential investors/developers and utilities on project outcomes,
- Additional activities undertaken by NERC for sustaining the program as a result of the WECS project.
- Increased number of public-private partnerships in this RE field.

3.3. Stakeholders

The main stakeholder is the National Energy Research Centre (NERC) which is also the beneficiary. Under the umbrella of the Higher Council for Science and Technology, the NERC has been established for the purposes of research, development and training in the fields of new and renewable energy and raising the efficiency of using energy in the different sectors of the economy. NERC has the appropriate independence, staff and financial resources to implement the project. The Centre has been involved in many international cooperation programmes, including with the EC, such as the MEDENER, a network of EU-MEDA Energy Efficiency Agencies, the twinning project on renewable energy with CRES in Greece and MED-ENEC, a regional project on energy efficiency in the construction sector. NERC is developing the Jordan long-term wind database and solar irradiance collection and evaluation. NERC has been entrusted the responsibility to contribute to the implementation of the Renewable Energy and Energy Efficiency component under the Energy and Mineral Law when approved. Under its by-law, NERC is allowed to act as an operator for any pilot project.

Other key stakeholders are the Ministry of Planning and International Cooperation (MoPIC), Ministry of Energy and Mineral Resources (MEMR), more specifically the Department of Alternative Energy and Energy Efficiency, the Ministry of Environment (MoENV), the Energy Regulatory Commission, the Electric Companies and more especially NEPCO and/or the distribution company who will buy electricity generated by the RE plants and MoPIC. NEPCO has already declared its willingness to collaborate in the project implementation and to buy the electricity

generated under fair conditions. Finally, it is expected to have a close collaboration with Jordanian universities from the very beginning of the WECSPP project.

Other project partners will include a wide range of institutional, economic and social stakeholders who should be potentially interested in participating in the activities: ministries, utilities, renewable energy agencies, banks, developers, entrepreneurs, other business representatives (in particular from industries and services dealing with electrical appliances and construction materials, as well as importers) and accreditation bodies.

3.4. Risks and assumptions

NERC as beneficiary and implementing partner will closely monitor the assumptions to mitigate possible risks and propose adequate measures accordingly to ensure that the project implementation will not be affected negatively. Key assumptions are:

- The Jordanian government will provide the human, material and financial resources needed to implement the 2007-2020 Energy Strategy,
- NERC is able to implement the RE section of the 2007-2020 Energy Strategy for Jordan without major obstacles,
- The Parliament will adopt the new Energy and Mineral Law (although not a pre-condition, the project would benefit of an adoption by the Parliament before kick off),
- NERC will produce a database system for wind and CSP in Jordan,
- A Power Purchase Agreement is signed with NEPCO or the local distribution company with conditions similar to the ones agreed with private Independent Power Producers,
- GoJ to finalise the related legislative and regulatory framework to help develop investments in this sector,
- Trained staff remain in service for both operating the RE installations and running the training and testing facility.
- Crosscutting Issues

This project fully integrates sustainability goals in its design as: (i) revenues generated from the sale of electricity will be directed to further programmes in favour of RE development in the country, capacity building and strengthening of expertise; (ii) local companies and partners will gain expertise enabling larger involvement of Jordan entrepreneurs in RE development and (iii) it will support and consolidate the initiatives of MEMR and other stakeholders in the RE field.

In addition to the reduction of greenhouse gas and other pollutants emissions for the electricity generated by the pilot power plants, the project will contract services, enterprises or organisations that respect national environmental standards. Environmental impact of the WECSPP project will be assessed during implementation. Environmental protection will be integrated into the training programmes. The project design is in line with the recent evolutions of energy and renewable energy strategy and policy of Jordan. It will also represent a practical means for Jordan to put in motion practical RE measures on the basis of proven, cost effective approaches and techniques in the wind and solar areas where the highest

potentials exist. Prospects for sustainability of the project achievements are therefore expected to be high.

Dialogue and working relations with electric utilities, MEMR, MoENV and ERC will be maintained and enhanced as the project cannot reach its full objectives without their support and collaboration. This project will also be a laboratory for NERC to maintain and strengthen sound and good governance practices.

During all phases of the project, and more specifically in the know how transfer programme and the activities of the laboratory, particular attention will be devoted to the principle of equality of treatment and opportunity for both men and women. NERC will carefully evaluate the impact of the project on gender issues and will integrate gender aspects into the training programmes.

4. IMPLEMENTATION ISSUES

4.1. Implementation method

Decentralised management, through the signature of a Financing Agreement.

Procurement and award procedures are decentralised to the NERC within the following limits:

The Commission controls *ex ante* the contracting procedures for procurement contracts >50.000 euro and *ex post* for procurement contracts ≤ 50.000 euro.

Payments are centralised except in cases where programmes estimates are applied, under which payments are decentralised for operating costs and contracts up to the ceilings indicated in the table below.

The Authorising Officer ensures that, by using the model of financing agreement for decentralised management, the segregation of duties between the authorising officer and the accounting officer or of the equivalent functions within the delegated entity will be effective, so that the decentralisation of the payments can be carried out for contracts up to the ceilings specified below.

Works	Supplies	Services	Grants
< €300,000	< €150,000	< €200,000	• €100,000

4.2. Procurement procedures

All procurement contracts implementing the project will be awarded and executed in accordance with the documents regarding procedures and standard documents published by the European Commission for the implementation of external operations in force at the time of the launch of the procedure. No grant contracts are foreseen to be passed in the scope of the project.

Participation in the award of contracts for the present action shall be open to all natural and legal persons covered by ENPI. Further extensions of this participation to other natural or legal persons by the concerned authorising officer shall be subject to the conditions provided for in article 21(7) of the ENPI Regulation.

All programme estimates must respect the procedures and standard documents laid down by the Commission, in force at the time of the adoption of the programme estimates in question.

4.3. Budget and calendar

The total EC contribution of 10 M € will be used for procurement of equipment, supplies, services and recruitment of technical assistance following tender procedures (supply and service contracts). Indicative breakdown by main components is as follows:

Technical assistance including training:	2.2 M €
Equipment:	6.8 M €
Information, communication and visibility:	0.5 M €
Audits and evaluations:	0.2 M €
Contingencies:	0.3 M €

Apart from the EC contribution mentioned above, the project will include an indicative contribution of Jordan of 1 M€ including works (0.4 M€), staff (0.4 M€), running costs and others (0.2 M€).

Implementation will cover a four year period. Tentative key milestones are:

- Year 1: Launching of the supply tendering procedure
- Year 2: Installation of wind testing facility, CSP pilot plant and laboratory's equipment
- Year 3: Operation of the facilities and electricity flow to the grid and availability of a comprehensive capacity building programme
- Year 4: Accreditation of the testing facility

4.4. Performance monitoring

The project will be subject to both internal and external monitoring. The internal monitoring functions will be carried out by the EC Delegation to Jordan. The external Result Oriented Monitoring will be undertaken by external monitors contracted by the EC.

A Steering Committee will be established to endorse strategic orientations, oversee project execution, and facilitate implementation of the activities. It is expected that at least some of its members will also be members of the MEDA Solar Plan Steering Committee (SC), with a view to developing synergies between these two projects.

Key indicators measuring progress, to be agreed during the first SC, may include:

- Actual installation and operation of a wind testing facility and a CSP pilot plant,
- Actual connection to the national grid and sale of electricity generated by the pilot installations,
- Quantity of kWh sold to the grid,
- Reduction of Greenhouse Gas emissions, in line with EU standard indicator 726: % reduction of CO2 emissions by renewable energy projects,

- Reduction of other pollutants emissions
- Number of hours of electricity flow to the grid
- Actual installation of a testing facility with relevant equipment
- Number of tests actually made on wind testing facility and CSP pilot plant and their performance
- Number of training days through classroom training, study tours, visits of foreign institutes, etc. attended by NERC staff
- Number of training and information sessions organized and delivered to Jordanian and/or regional partners
- Number of visits organized to the pilot site
- Number of communication materials developed
- Number and outcomes of partnerships generated (with government departments, energy utilities, donors, dedicated funds, lending institutions, business associations, accreditation bodies, etc)
- Additional resources generated (subsidies, loans, etc) to develop the RE market in Jordan

4.5. Evaluation and audit

The implementation of the programme will be the subject of a regular follow-up by the Commission services.

The programme will be subject to two external evaluations, to be contracted by Commission services, to be performed at mid-term and following the completion of the project.

The programme will be subject to yearly external audits, to be managed by the Commission services, following the adoption of each AWP. A final audit will also be performed before the end of the closure phase.

4.6. Communication and visibility

The EC Delegation will monitor that the EU visibility guidelines are respected by NERC, ensuring thus adequate perception of EU efforts among the key stakeholders and beneficiaries. The WECSP project will take advantage of, and elaborate further on, the actions initiated under the MEDA Solar Plan, the activities of the RCREEE to improve information on EC-funded cooperation activities and more generally, on energy-related issues in the region.

An Information, Communication and Visibility Action Plan will be elaborated by the NERC within the scope of the action in order to achieve the communication objectives of the project, as indicated in point 3.2 and according to the budget line foreseen for this purpose in point 4.3.