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EUROMED ENERGY COOPERATION & THE MEDITERRANEAN SOLAR PLAN
A unique opportunity for a fresh start in a new era?

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Abstract: The Mediterranean Solar Plan (MSP), the Union for the Mediterranean's (UfM) flagship initiative, has faced the challenge of unfavourable investment conditions in most Southern Mediterranean countries and also, since 2011, sudden and historical political changes and tensions. The MSP objectives to reach 20 GW of solar capacity by 2020 and bring substantial economic and social benefits for those countries are at stake. This paper examines the conditions and options for a highly effective and coherent MSP through domestic energy reforms with the support of the EuroMed energy cooperation.

Palabras clave: Energy, Mediterranean Solar Plan, UfM, reforms, EuroMed, renewable energy

Introduction

The sudden, successive and historical political changes in the Southern Mediterranean region and subsequent tensions over oil and gas supplies, routes and markets outline once again the strategic importance of this region and its energy weight for the EU and beyond. Nevertheless, the EU and in particular key member states failed to anticipate and, above all, accompany these civil society processes.

An unprecedented democratic era in Egypt and Tunisia also opens new perspectives and opportunities for the EuroMed cooperation, in particular on energy and the nascent EU External Energy Policy (EEP), and thus also leaves behind those recent erratic actions and inertias. In particular, it could stimulate the slow-moving Union for the Mediterranean (UfM) and the Mediterranean Solar Plan (MSP), its ambitious flagship initiative. For this, the MSP will need to rebalance its initial approach to reflect these recent changes and to be more in alignment with the existing conditions and challenges in the Southern Mediterranean shore.

Indeed, the MSP has been perceived by most Mediterranean Partner Countries[1] (MPCs) as having largely been imposed by the north, largely centralist (while energy efficiency and renewable energy are decentralized) and failing to consider several regional and national situations and experiences. As for its substance (and despite laudable objectives), the process has, up to now, largely neglected the fundaments to enable massive and viable renewable energy (RE) investment, as most MPC energy markets remain cribbed by artificially low and subsidized energy prices. Also, the MSP targets mostly electricity and does not fully include Turkey, despite its large wind and solar potential. Finally, the MSP's advancement has been slow (as October 2010 only 0.2 GW are effectively under implementation or 1%[2]), as investing in large RE electricity projects in this region remains complex and risky for investors.

1. Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, the occupied Palestinian Territory, Syria and Tunisia.
2. "Study on the Financing of Renewable Energy Investment in the Southern and Eastern Mediterranean Region", FEMIP/EIB; October 2010.

Even if its full objective of 20 GW renewable energy investment is reached by 2020, MSP contribution would be marginal (5% of total capacity and even less of electricity consumption, impelled by a rapid and hard-to control energy increase[3]). This is also much less than the large planned coal and gas power plant projects (almost 20 GW after +64 GW for the period 2000-2005) that are expected to reach 240 GW by 2020 (multiplied by 3.5 over 2005 to 2020), or two-thirds of the total at this horizon[4].

With the emergence of further democratic reforms in several PCs, timely and adequately-designed support is critical. It is therefore a real challenge over the coming months for the EuroMed energy cooperation and MSP to update and revise their objectives and to attempt to achieve a better fit with the regional and national conditions. It is also probably a unique opportunity to reinforce and found long-term partnership and to materialize the MSP. Thus, on its side, the EU should propose a coherent and attractive new cooperation scheme to its partners.

This note successively focuses on 1) Domestic energy reforms and 2) EU-MED energy cooperation:

1) Domestic energy reforms and action plans as pillars[5]

Thorough policy, institutional and regulatory reforms are necessary to create the conditions for renewable energy to compete

The energy situation of most MPCs is characterized by a rapid increase in demand (5-8% annually[6]), low efficiency in both supply and demand, artificially low energy prices as the result of generalized and costly consumption subsidies combined with high non-payment rates. As a result, current customer electricity prices in most MPCs are well below the generating costs of RE technologies (such as wind) and even below fossil fuel ones[7] (see also graph in Appendix 1). Thus energy companies, which are mostly public monopolies, are in chronic deficit (the scissor effect of insufficient revenues to cover increased investment and maintenance costs). Infrastructures are generally outdated and saturated, deteriorating security and quality of supply, especially for electricity (chronicle blackouts in Algeria and Egypt at peak times). Furthermore, volatility of international oil prices and hikes aggravate economic and social imbalances[8]. This persistent vicious circle appears unsustainable in the short to medium-term. In addition, it is the major barrier to both energy efficiency (EE) and renewable energy (RE) deployment. Actually, under current trends ("Business as usual"), total energy demand is expected to rocket by 70% by 2020, of which fossil fuels will cover 91%, leaving a tiny share to RE (4% or the same level as in 2009%[9]).

Reforms to build the fundamentals

To overcome these deep and accumulating difficulties and thus to avoid a serious energy crisis, MPCs need to progressively engage **thorough and sustained reforms**. These structured reforms should at first reinforce and build a solid framework and target fundamentals that have proved essential in other regions (Central Europe and Baltic States in 1990s) and Tunisia, one of the most advanced countries in the region. The sequencing and priorities of such reforms included:

- Building strong capacities (in expertise and adequate staff number) within a solid institutional set-up (national energy and environment ministries and their agencies, including statistical office, EE agency and a regulator).
- Notably enhancing public governance by separating state policy functions from regulation and policy enforcement, and management of the public energy sector.
- Developing a solid statistical system (in particular, energy balances, price database and indicators) and economic tools (e.g. demand forecast, least-cost plan) in line with international standards
- Autonomously designing, implementing and monitoring overall robust energy strategy with medium to long-term vision in synergy with other public policies (climate, transport, regional…) relying on **three pillars**:

a) **Energy security and access:** diversify fuels, sources and suppliers; put in place emergency crisis management (combination of contingency plans and oil stocks); continue rural electrification and promote sustainable biomass; set social tariffs for electricity and LPG (when relevant) for poor households combined with an incentive scheme for A or A+ class energy equipment and basic insulation

b) **Structural economic reforms**: within a clear, effective and stable legislative and regulatory energy framework for investment and operation, progressively set cost-reflective and progressive tariffs (by an independent regulator) to cover costs (including maintenance and investment costs) in parallel with the improvement of security and quality of supply. In complement to social tariffs, put in place targeted and direct subsidies for the poorest parts of the population (in replacement for direct subsidies and cross-subsidies on tariffs)

c) **Energy sector restructuring:** enhance monopolies' corporate governance and accountability to public authorities and clients; reinforce management capacities and social dialogue; upgrade and modernize facilities according to the demand and financial resources; progressively sepa-

3. In the context of weak or non-fully operational EE policies and institutions.
4. OME, 2008. Provisional results (2011) of the ongoing MEDPRO-Mediterranean Prospects project (funded under the EU's 7th Framework Programme; www.medpro-foresight.eu) indicates a lower increase of total capacity at 200 GW by 2020 with a higher share of renewables (26%, of which 14% for hydropower and 12% for other renewables (wind accounting for almost 8%).
5. Largely inspired by "Heliosthana, a Mediterranean sustainable energy country"; WWF/HBF; May 2010 -*www.panda.org/heliosthana*.
6. With a 7% annual increase, capacity has to double every 10 years.
7. In particular due to low prices (Egypt: 2 c€/kWh, ALG: 3.5c€/kWh, Morocco: 6.5c€/kWh, Tunisia: 9€c/kWh) and non- payment (Algeria: 15%, Egypt: 35%, Lebanon: 33%); average wind generation cost is at around 6€c/kWh (without transport and distribution cost) – see graph in Appendix 1.
8. Morocco: deficit of the "Caisse de compensation" reached around 4% of GDP in 2010 (2% in 2007); Egypt: subsidies for oil and gas account for 6% of GDP and those for electricity for 8% (www.esmap.org/esmap/node/17); Lebanon: 17% of the 2007public budget funded general electricity price subsidies.
9. For total energy primary supply - TPES (electricity consumption accounts for 15% of TPES in 2009 and 18% in 2020-OME, 2008; MEDPRO, 2011 (provisional).

rate natural monopoly activities in specific state-owned entities (e.g. transmission system operator (TSO) owning and operating the electric and gas grids) to lift technical barriers (e.g. national grid bottlenecks to connect planned RE capacity and interconnections).

Sustainable energy action plans

Once those crucial reforms (in particular towards full cost-reflective energy prices and more efficient energy companies) have taken shape and force (enabling stabilization), sustainable orientated energy policies can develop, as in Tunisia since the mid-1980s. Indeed, energy efficiency and renewable energy become attractive for private and public investment. EE has proven a primary and cost-effective tool to reduce high energy intensities and waste, and thus consumer energy bills as well as helping to control energy demand, also a condition to give a share to RE.

To foster energy efficiency and renewable energy (EE&RE) deployment, more experienced and structured administrations can also better design and implement action plans for EE & RE with detailed priorities and an implementation calendar. A key item is to set a clear and stable regulatory framework, including transparent permitting procedures and non-discriminatory and open grid access and effective RE support schemes.

Action plans are powerful tools to foster energy efficiency (a cost effective priority) and renewable energy deployment

In short, a solid and thorough policy, institutional and regulatory reforms are indeed necessary to create the conditions for renewable energy (in particular solar technologies) to compete.

2) Towards a more integrated and balanced EuroMed energy cooperation

A broad regional and bilateral EuroMed cooperation for energy has been developed over the last 16 years and is described and analysed herewith.

EU-MED regional energy cooperation framework

Within the Barcelona process and now the Union for the Mediterranean, the EU and Southern Med partners have developed a **regional energy cooperation framework.** It relies on the EuroMed Energy Forum[10]and Energy Ministerial conferences[11], both co-shared by the European Commission (EC) and a rotating MPC presidency. The last Ministerial conference (held in 2007 in Limassol) adopted the 2008-2013 regional energy cooperation **action plan**. It sets clear guidelines and priorities, notably the convergence of energy policies, integration of markets and realization of infrastructure of common interest.

Nevertheless, the monitoring (by the regional project MED-EMIP[12]) of these priorities showed a limited implementation. While a valuable operational structure (the EuroMed Energy Forum) remains a non-permanent body (gathering only a few times a year) and thus can hardly cover in depth and continuity the action plan implementation, developments and update on realisations of regional projects. Furthermore, the participation of all EU 27 countries makes the management of meetings and discussions complex and lengthy. Also, on the form, the EC as the Energy Forum's main financer maintains the main leadership and initiative, at the risk of a certain relative imbalance in the cooperation.

Considering the rapid and profound changes in the region, with new governments adopting new policies, it seems timely and needed within the EU global cooperation policy to re-establish the regional energy cooperation framework. In particular, the approach and cooperation mechanisms should be adapted to the new partner situation and goals, as well as improve the efficiency and effectiveness of regional cooperation.

Thus, a new EuroMed Energy Ministerial conference (to be possibly held in Tunisia from the autumn of 2011) would be an opportunity to engage this process, both on the cooperation framework and the design of a **new 5-year regional action plan**[13]. Its preparation should closely involve MPCs and its national and regional agencies on an equal footing in order to ensure large agreement and sustained support and ownership. Also, the UfM Secretariat could play an interface role with governments.

Such a new joint regional cooperation action plan would also cover institutional responsibilities between various participating entities, notably the enforcement of the work plan. Also, this broad process will require a new and adapted platform involving key stakeholders for wider and effective debate, approval and support for implementation. Such a platform would include not only energy ministries and their agencies (for statistics, EE&RE, regulation), and the Regional Centre for Renewable Energy and Energy Efficiency (RCREEE) in the Expert Group but also be involved in separate forums, the industry (oil and gas, electricity and RE sectors), R&D institutions and active NGOs. Such an approach and model has already existed since 2003 in South East Europe with the "Athens Forum" and then the Energy Community[14]. On the EU side, a set of Member States (MS) representing the EU27 appears more simple and effective[15].

10. Made up of an Expert Group (gathering on a regular basis, 2-3 times a year) and a General Director for Energy Group.
11. Euro-Mediterranean Energy Forum in Athens in May 2003 and Rome in December 2003.
12. Monitoring by MED-EMIP: www.medemip.eu/WebPages/Common/Measure.aspx
13. The new action plan should better integrate the climate change dimension, in particular carbon finance under the post-Kyoto protocol. The regional action plan and priorities will also shape and link the various bilateral cooperation plans of action.
14. http://www.energy-community.org/portal/page/portal/ENC_HOME/INST_AND_MEETINGS ; Energy in the Western Balkans: The Path to Reform and Reconstruction, IEA, 2008.
15. An option being two to three rotating countries, including at least one MS on the northern shore of the Mediterranean.

ENPI South Energy Programme

Since the Barcelona summit in 1995 and process, the EC has developed a large, ample and significant energy support programme at regional and country levels. The European Neighbourhood and Partnership Instrument (ENPI) South[16] is its framework instrument in the region and is largely in line with the Limassol regional energy cooperation action plan (2008-2013). Its recent and on-going regional projects include:

– MEDSTAT(I, II &III)–since 1996, statistics methodology and collection for 7 sectors, including energy: methodologies for data collection for balance and indicators needed for EP and investment - http://epp.eurostat.ec.europa.eu/portal/page/portal/medstat/introduction/
– MED-EMIP - regional energy cooperation: a platform for energy policy dialogue and exchange of experiences to enhance Euro-Med cooperation, integration of the energy markets (MEDRING study on regional electricity interconnections) and improved security and sustainability - www.medemip.eu
– MED-REG (I & II) - Energy regulation: supports the development of a modern and efficient energy regulatory framework in the MPCs and strengthens their cooperation with EU energy regulators - http://medreg.ipi.it
– Maghreb Electricity Market Integration Project (IMME): aimed to assist the three MPCs to develop reforms to foster electricity trade within the region and with the EU
– Euro-Arab Mashreq Gas Co-operation Centre(I &II)-EAMGCC was established in Damascus by the EU and Governments of Egypt, Jordan, Lebanon and Syria with the objective to assist countries to develop natural gas policies and infrastructure projects (e.g. Regional Gas Master Plan and Network Development Plan)-www.eamgcc.org
– MED-ENEC (I & II) - Energy efficiency in construction: supports MPCs on energy efficiency and the use of solar energy in the construction sector, through capacity building, fiscal and economic instruments and pilot projects - www.med-enec.com
– "Paving the Way for the MSP": designed to facilitate the realization of the MSP through supporting the deployment of EE&RE policies, with a priority on market reforms, EE&RE policy design and implementation, R&D and financing-www.pavingtheway-msp.eu.

Those technical assistance projects aim to reinforce and build the capacities of MPCs in those various areas in a complementary manner. They are complemented at country level by specific bilateral projects both technical assistance and twinning between MPCs and EU administrations (e.g. on-going EU-Moroccan energy twinning).

16. Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, occupied Palestinian Territory, Syria and Tunisia.

The overall goal of these ENPI South projects is to contribute to the development and realization of reforms and improvements, and thus to the MSP. Of particular and direct relevance and importance is the recently-started project "**Paving the Way for the MSP**"(2011-2014). Its transversal approach, notably on regulation, subsidies and tariffs (Task 1: Improvement of the Regulatory and Legislative Framework), design of EE&RE policies (Task 3: Support to implement sustainable energy policies) and financing (Task 4: Support to Investment facilities) are key items to support both domestic reforms and thus MSP project development. It envisages close cooperation with other ENPI projects, RCREEE and donors, in particular the World Bank Clean Technology Fund (CTF).

Within the emerging EU External Energy Policy and ENPI, the EU-MED energy cooperation should continue an overall approach to assist and support MPCs in implementing thorough and balanced energy reforms and policies (see Section 1 above), progressively converging with the EU integrated energy and climate policies. Thus, the new regional action plan, furthermore in the context of high oil and gas prices, should logically further focus on the support to reforms:

The EC has developed a large, ample and significant energy support programme at regional and country levels

– Foster assistance to MPCs in designing and implementing innovative schemes for direct energy subsidies and tariff reform (in coordination and continuation with MEDREG II and the project Paving the Way for the MSP)
– Launch a regional initiative on EE (possibly with other donors as UNDP) focused on energy certification and labelling of appliances and buildings[17].

Also, the various project requirements and implementation should better value and use existing and recognized experiences and best practices in more advanced countries like Tunisia (which has developed extended and broad EE and RE plans and programmes with significant impacts on energy consumption and intensity paths[18]).

Regional focal institutions

The Regional Centre for Renewable Energy and Energy Efficiency (RCREEE)[19]was established in 2008 in Cairo at the initiative of the Danish and German cooperation agencies, and then with EC support. Staffed by a joint EU and MED expert team[20],RCREEE has developed a broad and strategic set of activities on EE&RE policy deployment in coordination with ENPI South projects (MED-EMIP and MEDENEC), positioning as the regional reference for EE&RE.

17. On which EU countries have extended experiences and references, in synergy with MPCs (in particular Tunisia) that already introduced labels for appliances and residential buildings.
18. Between 1990 and 2005, the country energy intensity dropped by 19%, an unprecedented result in the region.
19. Includes the nine ENPI-South Arab countries plus Libya and Yemen; www.rcreee.org
20. As of 2010: 2 EU, 5 MPC executives and experts.

In a different area, the Euro-Arab Mashreq Gas Co-operation Centre in Damascus has, since 2006, played an active role in regional cooperation on gas market development and the Egypt-Jordan-Syria-Turkey gas export route.

These regional joint bodies, in particular RCREEE, have proved effective for building MPC capacities and expertise, transferring and disseminating know-how and enhancing ownership over the medium term. Also, they mutualize resources and have a leverage effect in securing new funding, notably from IFIs, thus contributing to their sustainability.

The next EuroMed energy action plan should consider the options and ways to:

1. Reinforce **RCREEE capacity and strength** and study the feasibility of a) fully integrating climate change dimension, in particular carbon finance for EE&RE projects; and b) transforming RCREEE into a regional multi-energy centre (integrating other existing initiatives, if necessary) with a branch in the Maghreb, with multi-years financing. Relevant references in other regions include the ASEAN regional energy centre AEEMTRC[21], an active focal point and counterpart of EU cooperation in this region and other initiatives.
2. Ensure a high **coordination**, articulation and synergy (e.g. through joint and interactive monitoring and evaluation tools) in particular in the support to MPC's EE&RE deployment, including action plans and MSP investment schemes, between RCREEE (as the technical and regional policy reference) and EuroMed institutions (Energy Forum and UfM Secretariat), EU projects and other donor regional and bilateral projects.

Regional joint bodies, in particular RCREEE, have proved effective for building MPC capacities and expertise

EU-MED energy market and EU diversification

One prominent and continuous objective of the EuroMed energy cooperation has been to foster energy trade, in particular electricity, through pan-regional and sub-regional energy markets. While several MPCs are positioned as major oil and gas exporters and suppliers to the EU, electricity trading has remained much more limited. Only a small electricity interconnection exists between the two shores (i.e. the cable between Spain and Morocco, with a capacity of 1,400 MW, or the equivalent of three large power plants), and it has been mostly used by Morocco to import from Spain[22]. Between MPCs, the differences of regulatory frameworks and prices as well as constrained interconnections and transmission capacities have limited flows to technical exchanges. Nevertheless, within the IMME project, a MoU was signed in 2010 between the three Maghreb countries, thus opening the path for further cooperation[23].

Also, the EU Renewable Directive[24]provides the possibility to import significant volumes of renewable electricity (REL) from third countries in the coming decade. It enables EU Member States (MS) to import renewable electricity from outside the EU and to incorporate it into their RE target for 2020, something that remains challenging for several MS. Even if to date only Italy has indicated a willingness to use this possibility, and that the tariff levels remain uncertain (an EU feed in tariff for labelized non-EU REL remains at the concept stage), this has the potential to boost REL investment in the MPCs (including for EU manufacturers and investors). It can also create an EU-MED green electricity market, provided that a transparent and verifiable control system (standards and independent labels) is put in place in MPCs, together with adequate and accessible submarine transmission infrastructure. This will provide a crucial market base for MSP-supported projects if market fundamentals and regulatory and investment guarantees enable financing and operating of new generation plants and grids.

Also, the EU energy industry has established two major regional initiatives in relation with the MSP in cooperation with MPC operators:

– DESERTEC brings together large multinational and integrated energy groups[25] and aims to build a network of large renewable electricity projects in MPCs (in the range of 20 GW), mostly CSP projects for the EU markets. DESERTEC signed framework agreements notably with Tunisia[26] and Algeria.
– Medgrid (ex-TRANSGREEN) comprises major TSOs and utilities[27] and focuses on regional interconnections, in particular studying the feasibility and developing the most attractive lines to export REL from the south to the north of the Mediterranean.

These projected interconnections should be designed and used to effectively exchange REL, *not* to import poorly-regulated fossil and nuclear power generation (e.g. coal and gas power plants in Tunisia and Morocco planned by some EU utilities to use future "green" electric interconnections to export to Spain and Italy), which is, furthermore, outside the EU emissions trading scheme (ETS). As well as destabilizing partner energy systems, this will create unfair competition (even dumping) for EU renewable and fossil electricity producers. Also, it appears crucial to ensure an effective playing field between investors and a minimum coordination between DESERTEC and Medgrid, and convergence within a new MSP (see below).

21. Since its creation in 1992 with the assistance of EC (notably EU expertise seconded), the ASEAN Centre for Energy - www.aseanenergy.org covered a broad scope of energy items at regional and national levels, contributing to capacity building of both centre team and ASEAN countries (administrations and industry). It has also enabled to secure significant fund-raising with important leverage.
22. In 2010: 3.9 TWH or around 16% of Moroccan consumption.
23. In September 2009, an electric interconnection of 400 Kv capacity between Algeria and Morocco was commissioned
24. Ref. 2009/18/EC, Art. 9
25. Including Munich Re, Deutsche Bank, Siemens, ABB, E.ON, RWE, Abengoa Solar, Cevital, HSH Nordbank, M & W Zander Holding, MAN Solar Millennium, and Schott Solar-www.desertec.org
26. Pre-feasibility studies for pilot projects worth 500 MW: 250MW CSP plants, 125MW photovoltaic and 125 MW wind
27. Abengoa, AFD, Alstom, Areva, AtosOrigin, CDC infrastructure, EDF, Nexans, Prysmian, RED Eléctrica de España, RTE, Siemens, Taqa Arabia-www.medgrid-psm.com

Integrated regional financing

Undoubtedly, the realization of the envisaged multiple investment projects within the MSP, DESERTEC and Medgrid, once regulatory and market conditions are met, will also heavily depend on the financing availability and conditions.

Up to now, the financing of RE investments in MPCs by private banks (EU and PC) has remained limited (e.g. Tunisia's solar water-heater PROSOL programme[28]). International Financial Institutions (IFIs) provide most of the financing. While the World Bank with the CTF is engaged in the region mostly in the financing of REL, the EU is the largest contributor through various channels[29]:

– European Investment Bank (EIB): the EU public bank opened a regional office in Cairo and two country offices in Tunis (2004) and Rabat (2005). Its loans, which target large projects (minimum of 20/25 m€), are provided through a specific tool Facility for Euro-Mediterranean Investment and Partnership (FEMIP[30]), credit lines to local banks and project investors (Special FEMIP Envelope). Out of a total of almost €10 bn of FEMIP loans for the period 2002-2009, the energy sector accounted for 37%, of which only €130m (1.3%) for renewable energy[31]. Also, the EIB recently signed a cooperation agreement with the UfM Secretariat.
– Neighbourhood Investment Facility (NIF): the EC ENPI financial tool provides grants as co-financing with other IFI and investors. Out of € 745m allocated for the 2007-2013 period, two MSP projects were selected for €11m[32]:
– InfraMed Infrastructure[33]: the first financing facility of the Union for the Mediterranean (UfM). The InfraMed Fund is dedicated to investments in infrastructure in the Southern and Eastern Mediterranean countries with initial commitments of € 385 million to be raised to € 1 billion (energy is expected to be a priority sector).
– EU Member States bilateral financing: several national development agencies such as the German promotional bank (KfW) and the French Development Agency (AFD) provide grants and concessional loans to specific projects (e.g. German and Spanish loans for wind farms in Egypt).
– The Mediterranean Carbon Fund (MCF): CDC Climat, AFD, PROPARCO, the European Investment Bank (EIB), CDP and KfW plan to launch in 2011 the MCF, which will purchase carbon emission reduction credits with initial commitments of € 200 m.

Overall, the EU's existing financing scheme for EE&RE in the region is diverse but it appears rather fragmented (e.g. between EIB's FEMIP and EC's NIF), not sufficiently energy-specific, and mostly designed for large projects (e.g. EIB: only over 20/25 m€), thus excluding a vast potential of small and medium projects, notably developed by SMEs.

In 2007, a study for the EIB[34] identified several best practices for financing EE&RE in MPCs[35]. Those tools to foster effective EE&RE deployment at best cost benefit include:

a) Credit lines to commercial banks: IFI credit lines in local currency or in a currency easily usable in the country (to prevent exchange rate risk) with an interest rate 2 to 4 points lower than the average market rate, minimum loan duration of seven years, grace period of at least three years to be attractive for operations with rapid period of return and guarantees or against-guarantees.
b) EE/ER investment funds to take participations (equities) in EE&RE projects of intermediate size (3-5 to 15 M€) and ESCOs.
c) Direct project co-financing: grants (including carbon finance) for a fraction (20-80%) of the feasibility studies and investment costs to make projects viable (to pass the "breaking point') without generating undue profits.

Financial mechanisms need to integrate market development tools

Each mechanism (and optimally combined) will have to necessarily be accompanied and integrated with a market development tool, established in support for the national support schemes. This tool may include: technical assistance for project identification, preparation and follow-up of projects, and transversal actions (awareness, information, studies, trainings, audits, demonstration projects). This support is to be provided by joint EU and MPC teams.

Also, at the **institutional level**, as the EU plans to increase the total envelope of EIB loans for the region to €6 bn between 2011 and 2013 (2010: €2.6 bn), this provides an opportunity to establish an effective regional **EuroMed development bank** on the EBRD model. The EBRD itself which already covers Turkey, decided in May 2011 to extend its coverage to North Africa for a potential annual investment of €2.5 bn[36]. Another complementary action would be to create a specific EIB branch for the MED region (possibly named "EuroMed

28. www.unep.org/climatechange/finance/LoanProgrammes/MEDREP/PROSOLinTunisia/tabid/29559/Default.aspx
29. Also the GEEREF (Global Energy Efficiency and Renewable Energy Fund): Germany and Norway are GEEREF's founding investors with €108 million. The fund focused on equity investment in EE&RE projects but does not cover the Mediterranean region yet.
30.. http://www.eib.org/projects/regions/med/index.htm?lang=en
31. Two wind farms in Egypt and Morocco.
32. Wind Farm project in the Gulf of El Zayt (Egypt), capacity: 200 MW, Lead IFI: KfW, Other IFIs: AFD & EIB, Total cost: €340 M, NIF grant: €10 M, Other EU grants: €20 M; and Feasibility Study for a Concentrated Solar Power Plant (CSP) in Tunisia: Lead IFI: KfW, Other IFIs: AFD & EIB (tbc), Total cost: €120 M, NIF grant: €1 M.
33. Created in 2010 by Caisse des Dépôts (CDC-France), Cassa Depositi e Prestiti (CDP-Italy), the European Investment Bank (EIB), Caisse de Dépôt et de Gestion (CDG-Morocco) and EFG Hermes (Egypt), InfraMed Infrastructure
34. "Mécanisme Financier pour le développement de l'Efficacité Energétique et des Energies Renouvelables dans les pays sud- et est-Méditerranéens", 2007
35. EBRD EE&RE financial facilities in Bulgaria include: BEERECL-www.beerecl.comforEE/ER investments by private SMEs,REECL-www.reecl.org for loans to household EE investments) and EU/EBRD Energy Efficiency Finance Facility (EEFF)-www.bulgaria-eueeff.com for loans and grants (up to 15% of total) to EE investments in industry and services and AFD credit lines to Turkish banks for loans to SMEs - www.afd.fr/jahia/webdav/site/afd/shared/PORTAILS/PAYS/TURQUIE/Actualité/Engaging%20Banks%20in%20Green%20Finance%20LD%20-January%202011.pdf
36. As decided by the EBRD Annual Meeting in Kazakhstan on 20-21 May 2011: www.ebrd.com/pages/news/press/2011/110527.shtml. Current EBRD investments in Eastern Europe and Central Asia accounts for between €8.5 and 9bn per year.

Bank"). It would need close coordination with other financial initiatives such as the InfraMed Infrastructure, and eventually to integrate them into its portfolio. Also, a specific EuroMed bank would need to include a specific unit on EE&RE and climate (such as EBRD since 1994) to adapt tools and prepare projects related to the context and topic.

MSP, a catalyst for reforms and investment[37]

Already, the MSP, by putting high political priority on sustainable energy and setting ambitious targets to 2020, has proved useful to generate broad policy discussions and new initiatives. Its focused and transversal approach, with political support, has the potential to further advance the reform agenda, something that is needed in most MPCs to make effective large EE&RE investment. Thus, the MSP, within the EuroMed energy cooperation (and its current and future regional action plan) and the new regional context, would need to integrate various changes, including:

– Revising its quantitative objectives by:

- Better taking into account Turkey's EE&RE potential (estimated at 23 GW, only for wind)
- Incorporating heat (solar thermal) and biomass (biogas) to make a global RE objective (heat, biomass and electricity, excluding large hydropower)
- Expressing the revised "20 GW" objective in available renewable electricity (in GWh) to reflect the effective quantity of electricity delivered to the grid,
- Expressing the energy efficiency objective in negaWatts (in nGW) and saved electricity(in nGWh)
- Setting post-2020 renewable energy and negaWatts targets.

– Focusing the solar plans (or preferably titled "EE&RE action plans") with clear and detailed implementation calendars backed by robust market reforms to progressively reach market fundamentals.
– Giving a priority to EE (in particular standards and labels) the most effective and cost-effective tool to better control energy demand increase and satisfy needs with RE.
– Include an action plan for the rehabilitation and modernization of national grids and interconnections (as largely outdated and weak while RE requires strong grid capacity and reactivity).
– Better use the MPC expertise on EE&RE and replicate regional and national best practices.
– Promote regional partnership on related R&D, academic and manufacturing.

The new MSP would benefit from being widely discussed with all stakeholders and endorsed by the EU and MPCs, to thus become a cornerstone of both the EuroMed energy cooperation. On the implementation and institutional side, the MSP should be clearly articulated with clear responsibilities in particular between the UfM Secretariat, EC (headquarters and DUE), ENPI projects, especially the *Paving the Way for the MSP* project, MPC governments and regional centres. In addition, interfaces with the industry / investors (DESERTEC, Medgrid) and civil society should be set up with regular exchanges.

Such a global and focused scheme would enable the MSP to further and durably act as a catalyst for initiatives and cooperation between governments, industry, donors and civil society.

Conclusions /Recommendations

As the Southern Mediterranean region, the EuroMed Energy cooperation is at a decisive turning point, having the rare opportunity to re-launch an integrated and solid joint process based on strong fundamentals within a participative approach. For such global and integrated cooperation on equal footing, involving business and civil society is of great importance. EU and MPCs have an opportunity to establish this vision and objectives in a new Regional Action Plan backed by adequate institutions and resources for implementation and monitoring. This is also an opportunity to gain strength and credibility both for the nascent EU External arm, the European External Action Service (EEAS) and EU energy policy.

The MSP: a catalyst for initiatives and cooperation between governments, industry, donors and civil society

A new dynamic and balance of the EuroMed Energy cooperation has the potential to contribute to effective, durable renewable energy deployment and fewer energy- and carbon-intensive countries for the benefit of regional energy security, more durable economic development and climate. This would also enhance conditions for a joint space of long-term development and stability.

In this sense, this paper identified a set of key priorities to found an effective and durable EuroMed Energy cooperation and MSP:

– EU-MED regional energy cooperation framework Action plan:
Hold a regional Ministerial meeting as from the autumn of 2011 to discuss and adopt a new EuroMed energy action plan with a focus on supporting MPCs' energy reforms.

– ENPI South energy Programme

- Provide assistance to MPCs in designing and implementing innovative schemes for direct energy subsidies and tariff reform (in coordination and continuation of the *Paving the Way for the MSP* project).
- Maximize the use of regional best practices and expertise, foster EU tools (capacity building technical assistance and twinning) within policy integration.

37. Largely inspired by "Heliosthana, a Mediterranean sustainable energy country"; WWF/HBF; May 2010.

- Launch a regional initiative on EE focused on energy certification and labelling of appliances and buildings.

– Regional focal institutions

- Reinforce RCREEE to cover climate change and then form a regional multi-energy centre with multi-years programme and financing.
- Ensure high coordination, articulation and synergy between initiatives, in particular RCREEE with various EU and other donor projects.

– EU-MED energy market and EU diversification

- Materialise the Renewable Directive for Member States to import renewable electricity from MPCs and consider an EU feed in tariff for labelised non-EU RE.
- Ensure that North-South electricity interconnections are designed and used for the effective exchange of RE.
- Ensure an effective playing field between investors and a minimum coordination between DESERTEC and Medgrid, and convergence within a new MSP.

– Integrated regional financing

- Set specific and adequate integrated and packaged financial tools including credit lines to banks, EE/ER investment funds, grants (including carbon finance) for small and medium EE&RE projects led by a EuroMed development bank with strong capacities in sustainable energy.
- Establish an **EuroMed development bank** with adequate resources and strong EE&RE and climate capacities

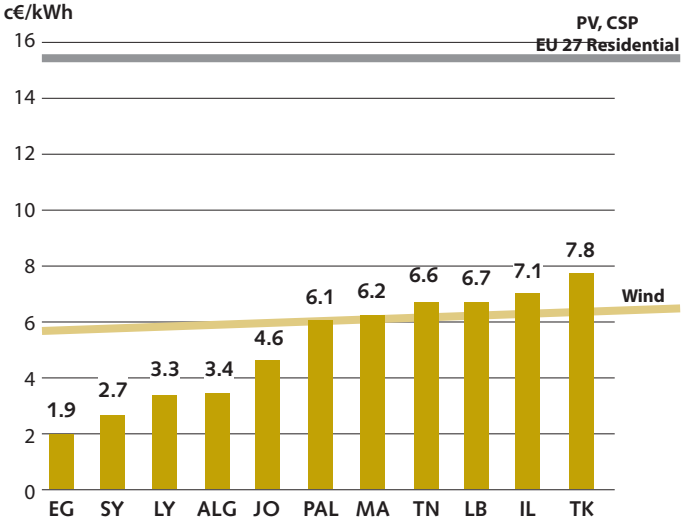
The EuroMed Energy cooperation and the MSP have a decisive opportunity to re-launch an integrated and solid joint process

– MSP

- Revise its quantitative objectives by:
  - Better taking into account Turkey's EE&RE potential.
  - Incorporating solar thermal and biomass to make a global RE objective (without large hydropower).
  - Expressing the revised "20 GW" objective in available electricity (in GWh) and energy efficiency objective in negaWatts (in nGW) and saved electricity (in nGWh).
  - Setting post-2020 renewable energy and negaWatts targets.
  - Adopt calendars backed by robust market reforms.
- Give a priority to EE, and in particular S&L, to better control energy demand increase and satisfy needs with RE.
- Develop an action plan for the rehabilitation and modernization of national grids and interconnections for renewable electricity exchange and trade.

Maintaining the current status quo or a fragmented and partial approach for the EuroMed Energy cooperation and MSP will lack strength and projection to make the MPC energy sectors more effective and sustainable, thus disappointing both MPCs and EU expectations, and creating uncertainties and instability.

Appendix 1. Average electricity tariffs for households (2008)



Source: MED-EMIP, Eurostat

Appendix 2. Mediterranean Solar Plan Strategy Paper

http://ec.europa.eu/energy/international/international_cooperation/doc/2010_02_10_mediterranean_solar_plan_strategy_paper.pdf

Document examined by the MSP experts group on 10/02/2010

1. The Mediterranean Solar Plan: a positive response to the energy and climate challenges of the Euro-Mediterranean region

The whole Mediterranean region and the European Union (EU) will both face major energy and climate challenges in the coming decades. Energy demand is projected to rise significantly, while fossil fuel prices will most likely continue to follow an unstable and most likely rising trend. To address these challenges, the countries of the EU and the other member countries of the Union for the Mediterranean need to intensify their efforts to develop adequate policies in the field of energy efficiency and energy savings, renewable energies and reduction of greenhouse gas emissions.

The EU is already a driving force behind international climate protection policy and has set itself specific targets in the now approved package of energy and climate policy measures[1]. Progress has already been achieved in the context of the Euro-Mediterranean energy co-operation. A "Priority Action Plan" covering the period 2008-2013 was adopted by the Euro-Mediterranean Ministerial Conference on Energy in December 2007. It includes an agreed list of priority infrastructure projects, as well as important provisions for the development of sustainable energy systems. Furthermore, a series of programmes supported by the European Union directly aim at integrating the Maghreb and Mashrek energy markets (e.g. MED-EMIP[2], MEDREG[3] projects) and at co-operation in the field of energy efficiency and renewable energy (MED-ENEC project[4]). These projects also closely collaborate with the Regional Centre for Renewable Energy and Energy Efficiency (RCREEE) based in Cairo. Additionally, EU Member States together with UfM Partner Countries support a number of relevant initiatives, such as the Mediterranean Renewable Energy Centre (MEDREC) based in Tunis as the focal point of the MEDREP Initiative. Other regional initiatives such as the Mediterranean Energy Observatory (OME) or MEDELEC have also provided a very important contribution. At Paris summit meeting on July 13th 2008, the Heads of states and governments of the European and Mediterranean countries have launched the Union for the Mediterranean (UfM), a new form of co-operation between the two shores of the Mediterranean Sea. This new partnership aims at fostering development, fighting climate change and strengthening the bonds between all the countries of the Union. It will build on the experience of the Barcelona process, launched in 1995, and integrate its former policies. The Union for the Mediterranean pays special attention to concrete projects and results.

One of the major projects proposed is the Mediterranean Solar Plan (MSP) whose prime objective is the development of a sustainable energy future in the Mediterranean region. The Mediterranean region has an enormous, and largely untapped, potential in the field of renewable energies. Renewable energies can significantly contribute to the sustainable development of the region. There is an opportunity for cooperation among all interested parties, because the benefits of the necessary investments can be shared in an equitable way. To this end, the MSP intends to increase the use of solar energy and other renewable energy sources for power generation, improve energy efficiency and energy savings, and develop electricity grid interconnections. The MSP will complement existing Euro-Mediterranean activities and co-operate fully with existing structures in the field of renewable energy and associated grid infrastructure development, with a specific focus on the following areas:

- **Setting up of an adequate legal, regulatory, economic, institutional and organisational environment** to enable the development and massive deployment of solar energy and other renewable energy technologies, and to facilitate their exchange or trade. A viable business climate, in particular, based on stable and transparent investment frameworks, with adequate pricing policies, will be necessary for long-term investments to take place. The EU directive for the promotion of renewable energy sources will offer key incentives for facilitating the implementation of the Mediterranean Solar Plan by providing, under certain conditions and in line with EU competition and State aid policies, for the import of "green electricity" from third countries to the EU.
- **Examine and promote**, in cooperation with the International Financial Institutions, the best use of all **possibilities to finance investments** in renewable energy sources.
- **Promote the development of electricity interconnections** within the Southern and Eastern Mediterranean, between Southern and Eastern Mediterranean and EU countries, and across the Adriatic Sea in order to establish a viable "green electricity" import and export framework, as well as, where necessary, within the EU in order to allow for renewable electricity trade in the whole region.
- **Support energy efficiency initiatives and energy savings,** in particular through the implementation of comprehensive legislative and regulatory frameworks, incentive measures, supported by awareness raising, training, and exchange of experience to realize the anticipated goals of energy savings by 2020.
- **Facilitate extensive co-operation on all technology aspects** inter alia transferring know how and technology, establishing a regional competitive cluster and networking of relevant research and scientific institutions active in the field of renewable energy and energy efficiency.
- **Avail all EU carbon mechanisms** for the benefits of both Mediterranean sides in purpose of improving the economics of the projects under MSP and fulfilling the obligations of the EU developed counties towards GHG emissions reduction under Kyoto Protocol and beyond.

1. The energy and climate package was adopted in December 2008 and sets binding targets for all EU Member States to achieve, by 2020, a 20% reduction in the EU greenhouse gas emissions and a 20% share of renewable energies in the EU final energy consumption.
2. Support to Euro-Mediterranean Energy Market Integration.
3. The MEDREG Association works to support cooperation between Euro-Mediterranean Energy Regulators.
4. Energy efficiency in the construction sector.

- **Continue regular dialogues** between the stakeholders of the MSP for close coordination and successful implementation of MSP under an appropriate set up.

By contributing to the development of solar and other renewable generation capacities and green electricity trade between the Mediterranean countries and the EU, the MSP will help to address the challenges of internal energy demand in the participating countries. It will help to achieve the objectives of the EU energy and climate package as well as national targets set in other member states of the UfM. But the MSP will also significantly contribute to the sustainable development of non-EU countries, promoting investments and job creation.

2. The Mediterranean Solar Plan: a comprehensive approach to develop renewable energy production and stimulate energy efficiency and create the right framework conditions

The MSP poses two complementary targets: (i) developing 20 GW of new renewable energy production capacities and (ii) achieving significant energy savings around the Mediterranean by 2020, thus addressing both supply and demand.

a) Developing electricity generation from renewable sources of energy

The MSP aims at increasing the use of renewable energy sources for power generation. The key element of the proposal is the setting up of a common framework in terms of legal, regulatory and investment environment for the development, by 2020, of 20 GW of new generation capacity in solar and other renewable energies in the countries around the Mediterranean Sea. To this end, the MSP will build on the enormous potential for solar electricity generation available in the Mediterranean countries, notably through the development of Concentrating Solar Power (CSP) and Photovoltaic (PV) plants, and of other available and mature renewable energy technologies.

The MSP will also promote activities in the field of transfer of know-how and technology to support projects in the field of electricity generation from renewable energies, electricity transmission and energy efficiency. Public and private actors from European and Mediterranean countries could elaborate a proposal to develop a Mediterranean technology transfer network, notably on solar and other renewable technologies. Topics to be covered shall include but not be limited to education and training, research and development and local manufacturing capacities. Collaboration with regional and international institutions, in particular the International Renewable Energy Agency (IRENA), in this field should be encouraged.

b) Energy efficiency and energy savings

The MSP aims at saving significant amounts of energy compared to a business as usual scenario, following inter alia the recommendations of the Mediterranean Association of National Energy Agencies (MEDENER) and in close co-operation with key partners and initiatives such as the Mediterranean Energy Observatory (OME), the Regional Centre for Renewable Energies and Energy Efficiency (RCREEE) in Cairo and the Mediterranean Renewable Energy Centre (MEDREC) in Tunis.

The MSP supports developing sectoral programmes, notably in the building and transport sectors, and regional projects and programmes in the field of energy efficiency (such as domestic heating systems, home appliances, efficient lighting,..). The possibility to support the development and/or implementation of National Energy Efficiency Action Plans for the MPCs should also be considered.

c) Creating favourable framework conditions

All Partners cooperating within the framework of the Mediterranean Solar Plan shall actively support all initiatives aiming at creating favourable framework conditions for the large scale deployment of renewable energy sources and in support of energy efficiency, in particular as regards legislative and regulatory aspects, and electricity transmission capacities.

Regulatory framework

The MSP will pay specific attention to the creation of a regulatory framework favourable to investments in the renewable energy sector. This will be based in particular on past and ongoing cooperation and initiatives relating to electricity market reforms, the cooperation among energy regulators and legislative and policy reform in support of Renewable Energy and Energy Efficiency.

Know-how and technology transfer

The MSP will foster and encourage developing the national capacity and transferring the technology to the developing countries in order to strengthen the skills in the domain of renewable energy and energy efficiency.

Electricity transmission

The MSP will contribute to identify and promote the electrical interconnections, which are absolutely vital for the power plants to be able to export a part of their production to other countries. Special attention will be given to the improvement of North-South interconnections in order to make possible the export of green electricity from Mediterranean countries to EU countries.

This work will be carried out in connection with the Mediterranean Interconnection Plan to be proposed by the European Commission, building upon the EU second strategic energy review that has identified the completion of the Mediterranean energy ring as a priority project. In particular, the following issues will need specific considerations:

a. new interconnections between EU and non EU MSP countries;
b. investment in new grids and interconnections within and between non EU MSP countries;
c. reinforcement of existing interconnections;
d. tariffs and access regime for the transmission of electricity from renewables.

3. Preparation and implementation process

During the initial "preparation stage" (2008-2009) several key actors have launched a number of initiatives and studies aimed at identifying the appropriate strategies in order to achieve the

objectives set out by in order to identify the objectives and strategies leading to the MSP. In the ensuing years, the first MSP projects shall be launched in different countries, while at the same time procedures for developing, structuring and financing projects under the Mediterranean Solar Plan will be elaborated. The first projects should be related to renewable energy and energy efficiency and specify which financial mechanisms, incentives and capacity building activities are most appropriate. A Master Plan will be developed by 2011. During the deployment phase, planned for the period 2011-2020, the Master Plan will be implemented at a larger scale, building on the experience gained during the initial phase.

Preparation Stage (2008-2009)

The preparation phase has been marked by a conference on 22 November 2008 in Paris that brought together high level policy makers, industry, investors, financing institutions and specialised agencies from all interested countries. Building on the results of a seminar held in Seville on 21 October 2008 with the European Solar Thermal industry, as well as on a workshop in Berlin on technology options and cost estimates for the development of solar and wind capacities in the Mediterranean region (28 and 29 October 2008), the conference was a major opportunity to discuss implementation issues, to identify investment and financing solutions, to raise awareness about the opportunities of the MSP, to connect relevant public and private actors, and to highlight potential projects in the field of renewable energies.

Action Plan 2010-2011

Based on this Strategy Paper, an Action Plan (AP) shall be set up in order to launch a first set of projects in each field during the period 2010-2011. The Action Plan should also duly cover aspects relating to the improvement of framework conditions (regulation, legislation, technology transfer, business environment).

The Action Plan shall inter alia allow identifying a first set of projects to be launched in 2010-2011. Through the development of these projects, it will be possible to define and test legal frameworks (licences, authorisation, tariffs etc.) and financial mechanisms, and to establish a viable import-export framework for green electricity to the European Union. This phase will in particular allow securing and developing adapted financing mechanisms as currently discussed notably with the World Bank and the European Investment Bank as well as with several bilateral development banks.

This stage should involve, in particular, industry, utilities, transmission system operators, potential investors and financing institutions and the public sector. Additionally, the Action Plan will, together with the Partners' investment plans and with the Mediterranean Interconnection Plan under development, provide for an assessment of the current electric interconnection situation. This will allow identifying the main links between the different regions involved in the plan that already exist or in the track or will be established in the near future. These include in particular the following interconnections:

- Morocco-Spain (operational)
- Morocco-Algeria (operational), reinforcement under preparation
- Tunisia-Italy (under preparation)
- Tunisia-Algeria
- Tunisia-Libya (existing cables, but not operational)
- Turkey-Greece and Turkey-Bulgaria (existing cables, but not operational).
- Egypt-Libya (operational)
- Egypt-Jordan-Lebanon-Syria (operational)
- Egypt-Greece (under-study)
- Syria-Turkey (Partially operational)

Furthermore, the Action Plan shall also take into consideration the already ongoing initiatives in the field of renewable energy and energy efficiency, including those for energy savings, and transfer of know-how and technology and seek to propose possible synergies and additional support where needed. The Action Plan shall be finalised by end 2010.

Deployment phase (2011-2020)

The long-term implementation of the Mediterranean Solar Plan will take place over the period 2011-2020 and notably aim at reaching the 20 GW target. The deployment phase will be supported by a master plan to be presented in 2011 and covering the period 2011-2020. Results of the work developed in the initial phase, as well as of all existing and current studies, notably the study "Identification of the Mediterranean Solar Plan", carried out by the EU Commission, shall be taken into account.

The instances that will be developing the plan shall work in close collaboration with the team of the EC-funded forthcoming technical assistance project "Paving the Way to the Mediterranean Solar Plan", expected to be launched in the first half of 2010, as well as with the other EU cooperation initiatives mentioned above, and with the MEDREG Association of Energy regulators.

On these bases, the Master Plan should develop a strategy covering in particular the following elements:

- Site selection issues and local industrial capabilities and renewable energy market development in the countries of the Mediterranean region;
- Initiatives in the field of solar and other renewable energies for power generation and energy efficiency in the Mediterranean countries and potential synergy measures to make the best possible use of existing efforts, notably regarding energy efficiency initiatives;
- Progress of legislative and regulatory reforms, institutional and administrative conditions, as well as other relevant infrastructure and electricity sector issues for a phased development of solar and other renewable technologies in the Southern Mediterranean countries;
- Suitable mechanisms for financing (including appropriate support and import -export schemes, concessional financing and carbon finance and other innovative financing schemes) along with the most cost-effective solutions to ensure active private sector involvement, taking into account

results from existing or coming publications, such as the Commission's "Communication on financing low carbon technologies" and the FEMIP study on the economic conditions regarding the Mediterranean Solar Plan contracted by the EIB;
- Address the specific issue of transmission infrastructures to EU countries, taking stock of existing bilateral agreements and the ongoing involvement of transmission system operators, and proposing, in particular, specific electricity grid infrastructure projects that could be of common priority in the Euro-Mediterranean context for establishing an effective green electricity import-export framework and could be addressed in the framework of the Trans-European Networks (TEN) initiative; - Relevant conditions for the improvement of energy efficiency in the most energy intensive sectors such as buildings, household appliances, industry and transport, including financial and economic aspects;
- Identify further needs for technical assistance and capacity building in the fields of renewable energy production, energy efficiency and technology co-operation and transfer. Synergies with the International Renewable Energy Agency IRENA could be suitable for this purpose.

The plan will include a road map detailing the phases, activities and precise timeline for the implementation of the MSP, providing the necessary flexibility for new projects and developments.

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