

Panel Summary: Job creation and industry development

Moderator: George Mergos, Prof., Terna Energy

Panelists:

- Kilian Bälz, Dr., Amereller Legal Consultants
- Khaled El-Askari, PhD, African Development Bank
- Benoit Richard, Saint-Gobain Solar
- Georgeta Vidican, PhD, German Development Institute (GDI)
- Jamel Boujdaria, Secrétariat général de l'UMA

Summary:

MENA countries could benefit from the deployment of wind and solar power plants if not only temporary jobs and imports of technology components is pursued but long lasting industry activity is triggered in those countries. Economic integration, diversification and foreign direct investments create wealth in MENA countries and the EU. In order to improve effectiveness of renewable energy regulation, renewable energy policy must be better aligned with overall goals of economic policy. In Europe renewable energy policy is focused on climate change whereas in MENA it has to focus on industry development and job creation.

Challenges / success factors

Job creation and industry development are seen as major benefits for economies involved in the rollout of desert power activities. Four aspects are seen to be important and need to be considered when discussing economic benefits in EUMENA:

- 1) **Economy wide effects** (macroeconomic effects). Desert power activities should fit in the economic policy agenda.
- 2) **Microeconomic impact**. Industry structure will shift from conventional energy to renewable energy.
- 3) **Innovation**. Technology innovation is a driving force for economic progress and command of new technologies.
- 4) **Public policy**. Renewable energies are expensive and therefore public funds have to be used efficiently. Fossil fuels have been subsidized and a shift into RE subsidization is required (new paradigm)

The deployment of renewable energy technologies in MENA countries requires the command of these technologies which in turn requires innovation and thus constantly improving of technologies. Systematic and transformative changes in the current energy innovation system need to be designed in order to embark on a clean technology industry pathway.

High investment costs, lack of awareness regarding renewable energy, centralized and non-transparent decision-making process and lack of R&D activities oriented towards high technology products are key challenges in MENA countries.

Innovation policy should be focused on the technology deployment (smart subsidies, mandatory use of renewables, green public procurement) and strengthening the role of governments (develop long term horizon strategies, choose technologies, set incentives to enable investments).

Private sector development (which has to include technology transfer mechanisms, guaranteed purchases of electricity as well as supply chain development programs), **enhancement of institutions and governance** (reform of subsidy scheme, strengthening of institutions and decentralization of decision making, protection of intellectual property rights) as well as **capacity building** through education and research need to be increased in order to improve the R&D and technology transfer capacity, which enable manufacturing activity and industry activity.

Important phrase

Besides the regulation of renewable energies and the market for the deployment of clean technology, innovation is the third pillar towards successful implementation of new technologies in a country. Direct investments do not automatically lead to technology transfer. In order to secure high quality in production processes national innovation systems can be supportive of clean technology solutions.

Flexibility in procurement processes encourages local contribution as well as tax incentives and efficient bureaucracy. Industrial and scientific clusters for renewable energies/ renewable energy free zones could be a good way forward as well as initial concentration on auxiliary operation and maintenance activities. Absorptive capacity for R&D has to be enhanced (human capital).

Possible Dii contribution

Dii will contribute to bridging the Mediterranean also in an economic sense. The European Union and its member states will enforce economic activity and potentially help accelerate the process of regional integration in the MENA region. The new wave of industrialization of the 21st century spins around clean technologies. In order to enhance export and simultaneously strengthen industry based in MENA countries, transfer of knowledge and investments is necessary. To enable these steps towards deployment of solar and wind technology effective industry regulation and innovation capacity has to be build up in MENA countries. Dii will thus also foster development in industry regulation and the design of incentive schemes for clean technology innovation.

Panel Summary: Knowledge Transfer & Capacity Building

Moderator: Prof. Louis Lemkow, Universitat Autònoma de Barcelona & Dii Advisory Board

Panelists:

- Alexandre Chavarot, Clinton Climate Initiative, Clinton Foundation
- Mouldi Miled, Desertec University Network
- Prof. Michael von Gagern, King Saud University
- Prof. Robert Pitz-Paal, DLR
- Dr. Hichem M'Saad, Volta PV & Solakta Solar

Summary:

Capacity building and knowledge transfer with regard to renewable energy in MENA are currently in their infancy. The panelists illustrated promising models and prototypes for further knowledge transfer and capacity building, while also identifying key challenges in the area.

Challenges:

Infancy of current industry and training structures in the region: Few students study RE-related subjects because there is such a limited RE industry, which, in turn, leads to relatively few training and job opportunities. This is likely due, in part, to the related challenge that CSP is not yet a market.

Similarly, there is currently no overarching policy framework – in the EU or MENA – to support and systematize knowledge transfer / capacity building processes.

Success factors:

Public support is a success factor for the Desertec vision: Capacity building / knowledge transfer are key tools with which to ensure public support is forthcoming.

Capacity building should follow a “teach the teacher” approach, with efforts aimed at training teachers and trainers in the region, not just students.

Capacity building needs to focus on creating a functioning regional system: Cooperation – between universities, between regions and between types of stakeholders – is essential.

Key positions:

The panelists consistently emphasized the need for coordination between stakeholders (government, industry, NGOs). They also underlined the importance of capacity building and knowledge transfer as: 1. a prerequisite for local RE production and 2. a MENA political support and local buy-in.

Possible Dii contribution

Dii's contribution lies in its ability to bring various stakeholders together and, thereby, contribute to the conditions that will make successful knowledge transfer / capacity building possible. Actionable policy recommendations to key stakeholders are a crucial step in mobilizing such support.

Panel Summary: Environmental aspects - Contribution to sustainable energy and water supply

Moderator: Gus Schellekens, Sustainability and Climate Change Team, PwC

Panelists:

- Maher Aziz Bedrous, Counsellor for Environmental Management and Studies Sector, Egyptian Electricity Holding Company
- Lettemieke Mulder, First Solar
- Dr Anthony Patt, IIASA

Summary:

Power generation has various environmental effects. Expanding the electricity production share of renewables is an imperative to enter an era of sustainability. Though naturally, there is no zero footprint technology and environmental vulnerabilities differ from site to site. The envisioned renewable energy project scale-up in MENA for local consumption (substituting conventional build-up in MENA) and for electricity export (substituting power capacities in Europe) touches a number of environmental dimensions.

The Desertec implementation effects the power sectors' GHG emissions, water consumption, land use and pollution. This has effects on global climate change, regional/ local water availability, ecosystems and the human environment. The various environmental impact dimensions are interlinked.

Challenges / success factors

- 1) The MENA regions susceptibility to climate change impacts
- 2) Reaching GHG emission reduction target of 100%
- 3) Ensuring sustainable water use in MENA
- 4) Moving towards full life cycle sustainability in the power sector
- 5) How to promote renewables with their higher costs in the context of financial crisis

Key positions

- 1) According to scientific findings there is a correlation between the Human Development Index and the climate change vulnerability of people: not income but education helps to reduce vulnerability to climate change
- 2) It is not about project specific emission reductions, it is about building the right 'infrastructure' to achieve the target; Solar power is the best example for investing in the right infrastructure due to its nearly unlimited resource potential (as opposed to wave or tidal technologies for instance)
- 3) Globally there is no scarcity of freshwater resources; in view of the regional water scarcity in MENA it is an open question what the effect of the Desertec implementation will be. Desertec could contribute to the mitigation of regional/local water scarcity
- 4) First Solar's full life cycle approach (offering PV solutions with environmental optimization efforts on the entire value chain) could serve as a positive example within the renewable energy sector: e.g. funds are being set aside for the guaranteed free of charge take-back and recycling of decommissioned plant components (approximately 90% -by mass- is recovered); recycling should be an integral part of the renewable energy build-up;
- 5) Patt: Think on a short- and long-term basis and do not lose either one; de-carbonization is an imperative; Mulder: Some efficiency improvements are low hanging fruits; Schellekens: There are high upfront costs, while on a long run it is more economical to switch to renewables today; Bedrous: Egypt has to consider today's costs but the government is aware of the necessity to bring down costs and the implicit environmental costs of today's energy infrastructure investments; therefore "we should start today to implement the Desertec vision"

Possible Dii contribution

- 1) Ideally the Desertec implementation strategy should have a positive impact on education, directly or indirectly via electrification, in order to reduce the MENA countries vulnerability to climate change (adaptation measure)
 - 3) There may be additional studies needed on the water scarcity issue (e.g. local impact of CSP scale-up and possible solutions). Dii could commission to "fill in the gaps".
- 2/3/4) Dii could guide a search for common standards for environmental reporting and verification: e.g.: GHG emissions on the full life cycle
- Dii could intend to set environmental standards/ guidelines - a code of practice - for project developers to ensure sustainable approaches regardless of possibly missing environmental regulations in MENA

Dii could develop suggestions how sustainability issues can be turned into more positive drivers of project success (perhaps with the involvement of local/ national governments in the MENA countries)

Important phrases

Discussing environmental challenges to the renewable energy scale-up

- Patt: Focusing on CSP dry cooling instead of wet cooling pushes back the moment to reach cost parity by two years, but is no real obstacle to the implementation
- Patt: “We do not need to worry about climate change impacts on Desertec investments in the next 50-100 years”.
- Bedrous: NREA’s experience has been that the Egyptian people’s perception of renewables and their environmental benefits is very positive; there is a need only to simplify modalities for the implementation of projects.
- Bigotti (from the audience): We need to actually realize that 2050 is not in the far future but “2050 is today” – because the energy infrastructure installed today locks in the future power mix with the subsequent environmental footprint.