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Within a 6-hour time-frame,
humanity's annual energy level
is reached...



Recommendations based on
the DESERTEC project

Convergence Letter **N°31**

About BearingPoint

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For more information: www.bearingpoint.com

Editorial content: Henri Tcheng and Jean-Michel Huet

Coordination and circulation: Sandrine Pigot and Stéphanie Lesdos

Contact: henri.tcheng@bearingpoint.com

Fossil energy reserves are becoming ever rarer but energy demands and global warming are on the rise. The DESERTEC project was set up in order to validate a method for climate protection, energy security and development by generating sustainable power from inexhaustible renewable energy sites and leveraging solar energy. While its aim appears ambitious, its implementation is definitely... epic.

The Mediterranean region, two shores with complementary issues

While the Old Continent has an aging population, the MENA¹ region has strong population growth. Similarly, both regions' economic growth rates are evolving in the opposite direction: Europe has a relatively low growth rate while the MENA region is experiencing much higher growth. And finally, scarcity of energy reserves in Europe is matched by overabundance in the MENA region. Given these issues, and Europe's technological know-how in renewable energy, there is a growing rationale for regional collaboration.

¹ MENA: Middle East and North Africa. This term generally includes the following countries: Algeria, Saudi Arabia, Bahrain, Djibouti, Egypt, UAE, Ethiopia, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Qatar, Sudan, Syria, Palestinian Territories, Tunisia and Yemen.

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DESERTEC focuses on fast global implementation of clean power generated by the world's deserts.

Several initiatives have been undertaken by Europe since 1995 in order to try and build bridges between these two regions. For example, the Barcelona process launched by Jacques Chirac aimed at establishing a dialogue between the EU and the countries of the southern Mediterranean shores in order to build euro-Mediterranean partnerships covering security, development and cultural domains. A very similar initiative was launched by Nicolas Sarkozy in July 2008 with the UPM or Union for the Mediterranean which aims to strengthen links between Europe and Mediterranean countries.

DESERTEC's vision is to bring these two regions together through desert-based clean energy projects. These regions offer not only exceptional sites with high solar irradiation, but also locations with important wind, biomass, and geothermal potential. The DESERTEC concept was developed by the TREC², a worldwide network of scientists, leaders and entrepreneurs, in collaboration with the German branch of the Club of Rome. The TREC has participated in three studies that have evaluated the potential of renewable energy in MENA countries, expected water and energy needs for the year 2050 in these countries and the feasibility of an electricity supply network between the EU and MENA.

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In 2009, the DESERTEC foundation was created in order to grow the DESERTEC concept on a worldwide scale. In July the same year, a covenant was signed by the foundation, the reinsurance company Munich – Re and twelve other companies from Europe, the Near East and North Africa to develop the DESERTEC concept in the EU-MENA region. Then, in October, these very same partners created the DESERTEC Industrial Initiative which later became Dii GmbH. The Dii's objectives are:

- Creation of a positive investment environment: in order to develop a technological, economic, political and regulatory framework which attracts interest and enables investment in renewable energies and interconnected power grids in North Africa and the Middle East;
- Initiation of selected reference projects as a means of demonstrating overall feasibility and reducing costs;
- Development of a long-term implementation concept (Rollout Plan) by the year 2050, including guidance on investment and funding.

Solar energy production techniques can be quite different but the two main ones are thermodynamics and photovoltaics. Dii has chosen to take both types of technology into consideration in order to choose the one which has the best long term cost-benefit profile.

Setting up a long-lasting partnership: child's play?

DESERTEC can provide answers to worldwide energetic mutations. It forms part of the framework for the battle against green house gases for

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countries using coal or gas fired power stations that have not opted for nuclear energy (non-CO₂ emitting mass energy). In this way it helps large scale deployment of renewable energy and the diversification of energy partners, the objective being to increase European countries' energy independence.

Firm political will and an adequate legal framework are prerequisites for DESERTEC to succeed. Without these elements, European legislation will not be able to evolve and pave the way for sound competition, green electricity markets as a foundation for its development and technological innovation as a lever for lowering costs and reaching profitability targets.

Setting up solar power plants in the desert should be carried out with respect to a number of fundamental principles, notably compensating the associated environmental impact. For instance, solar thermal power plants use fresh water as they have to generate vapour that is meant to activate the turbines. Yet in these arid regions, water is obviously a rare commodity.

Win-win logic is a key element to ensure that governments of countries in the south subscribe to the project. Other than the fact the power produced will mainly benefit the countries that not only produce it but need it, Europe will also have to transfer more than just its know-how to the MENA region. This could be in the form of locally created employment so that the skill transfer becomes a reality, as well as by the creation of training and study programmes on renewable energy in the MENA region.

In fact, MENA countries may benefit from Desertec and the activities of Dii through a wide range of economic, ecological and socio-economic opportunities:

- Stabilisation of local energy supplies leading to enhanced security of supply for their own economies and people;
- Possibility to export clean energy to Europe and other regions;
- Creation of local industries, jobs and knowledge transfer;
- Reduced dependence on different types of fossil fuels and the effects of volatile fuel prices;
- Development of a forward-looking, sustainable and innovative energy infrastructure in light of dwindling fossil resources; countries that (still) have substantial fossil fuel resources are given the opportunity to invest in sustainable energy supplies;
- Growth and economic stimuli resulting from substantial investment;
- Further economic diversification;
- Reduction in CO₂ emissions;
- Fighting poverty – improving living standards;
- Improved cooperation between the MENA nations, and with Europe;
- Securing political stability.

These specific actions will help improve the local economies of these developing countries and guarantee the sustainability of North South exchanges. European countries on their part will have an alternative source of renewable energy to nuclear power and a solution to their increasing need for energy.

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The main challenge is striking a balance between the long term profitability of this type of project for the EU and finding an answer to the needs of North Africa and the Middle East's population. MENA countries can convert their deserts into inexhaustible sources of clean energy but they still need to cover their own fast-growing energy needs!

DESERTEC, a lever for development in Africa?

As well as being an alternative source of energy, DESERTEC also represents a chance for new perspectives in North Africa both in its relations with Europe but also those with the rest of the African continent. Africa's potential is enormous; it has a young population and large reserves of minerals and renewable energy sources. Might the Sahara desert just be generous enough to satisfy not only Europe and North Africa's needs at first but also sub-Saharan Africa next? If this were the case, North Africa's role would become pivotal to managing the region and initiating south-south exchanges for solar energy as well as actively participating in the transformation of the African continent into a prosperous region. A region that will at least partly overcome problems related to poverty, education, crumbling infrastructure, economic under-development and perhaps even political stability.

Stefan Bahrenburg, Emmanuel Autier, Jean-Michel Huet,
Amira Khediri, Prisca Balasoobramanen