

TRENDS

LET THE SUNSHINE IN

Global industrialization has raised the standard of living and increased life expectancy for many people around the world. Yet ironically, in the face of an ever-growing population, the reliance on fossil fuels that helped to drive these advances now threatens to erode them. A concept known as Desertec proposes to address the problem of how to provide 10 billion people with sufficient food, water, and energy by providing them access to solar power from energy-rich desert areas.

Giselle Weiss, journalist

Gerry Wolff remembers the days when he and other volunteers would stand outside energy conferences handing out leaflets to promote awareness of a new solar power initiative to participants who were largely uninterested. Now, he says, “We get invitations to speak at those conferences.” Wolff is the UK coordinator for Desertec, a project aimed at harvesting desert sun and turning it into green electricity for local and European use.

Desertec is predicated on three basic ideas: that, using proven technology, less than 1 percent of the world’s deserts could generate as much electricity as the world is now using; that it is feasible and economic to transmit desert electricity for 3,000 kilometers or more; and that most people in the world live within 2,700 kilometers of a sunny desert. In principle, these factors make the desert a huge source of clean power.

In 2009, the Desertec Foundation together with the German reinsurance giant Munich Re launched the Desertec Industrial Initiative (DII), a consortium of 13 major companies, including ABB, Deutsche Bank, E.ON Schott Solar, and Siemens. The preliminary goal of DII is to plan and develop a comprehensive framework for generating clean power in the deserts of North Africa.

Substantial effort has gone into developing solar panels since the 1970s, but, until recently, the technology has been rather expensive and only really suitable for niche applications. Although sunlight is free, it is also diffuse, and collecting it in substantial quantities requires vast tracts of land. Moreover, ordinary high-tension transmission lines are not suitable for long distances. In contrast to conventional technology, Desertec concentrates desert sunlight using mirrors to create heat, which in turn raises steam to drive turbines and generators like an

ordinary power station. In desert regions, this “concentrating solar power” is cheaper and more effective than solar panels. Desertec also proposes to upgrade the existing electricity grid throughout Europe, the Middle East, and North Africa to transmit solar power efficiently over long distances using low-loss transmission lines. Of course, between now and then, much remains to be done. For example, changes to government policies, laws, and regulations need to be made in both client and producer countries to create the right commercial climate for Desertec. These changes are easier to make in some countries than in others. Other critical issues to be hammered out include the location of power plants, how to finance various components, and what to do with existing infrastructure.

Is Solar Power the Best Solution?

Desertec is not without its critics. Common objections concern cost, the ability of solar technology to withstand harsh desert conditions, whether wind power might not be a better alternative, the economic risk to domestic sources of renewable energy, the environmental consequences for the desert itself, security of the energy supply, and how Africa will benefit from a (for now, at least) largely European initiative and one that involves big business. To answer these questions, the foundation cites studies from the German Aerospace Center as well as opinions from experts based in the Middle East and North Africa. All support the project.

In the meanwhile, initial plans are moving ahead. In July 2010, DII announced plans to build a pilot plant in Morocco that would generate 500 to 1,000 megawatts of power. And the EU energy commissioner has been pushing for a pan-European law on renewable energies – based on existing German law – that would affect Desertec positively. If all goes well, Desertec also promises a number of “spinoff” benefits. For example, the mirrors used to concentrate sunlight can provide shade for buildings and for horticultural production. Also, for solar thermal plants along coasts, seawater used for cooling units can be desalinated to create drinking water. These extra considerations are important in building the groundswell of support that will be needed to make Desertec work. The idea of renewable energy automatically resonates with people. But, says Wolff, “the figures have to add up for investors.” ●



Gerry Wolff

UK Coordinator for Desertec, a program that generates clean power in the deserts of North Africa