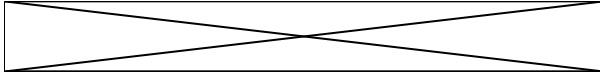


Plan to power Europe from the Sahara



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At a glance...

Desert mirrors would generate 15% of Europe's power
Scheme would use CSP, opposed by photovoltaic champions
Political risks may also prove significant



*Reuters*ZenithSolar, an energy company in Israel, plans to launch this solar farm in April 2009 using new technology it says can produce cheap and efficient electricity while supplying hot water to homes

A 400 billion euro plan to power Europe with Sahara sunlight is gaining momentum, even as critics see high risks in a large corporate project using young technology in north African countries with weak rule of law.

Desertec, as the initiative is called, would be the world's most ambitious solar power project. Fields of mirrors in the desert would gather solar rays to boil water, turning turbines to electrify a new carbon-free network linking Europe, the Middle East and North Africa.

Its supporters, a dozen finance and industrial firms mostly from Germany, say it will keep Europe at the forefront of the fight against climate change and help North African and European economies to grow within greenhouse gas emission limits.

Others warn of numerous pitfalls, including Maghreb politics, Saharan sandstorms and the risk to desert populations if their water is diverted to clean dust off solar mirrors.

They say the concentrated solar power (CSP) technology behind Desertec involves greater costs and risks than the fast-growing patchwork of smaller-scale photovoltaic cell installations that generate most of Europe's solar energy today.

Desertec's founders are lured by the fact that more energy falls on the world's deserts in six hours than the world consumes in a year.

"The Sahara offers every advantage you want - proximity to Europe, virtually no population and more intense sunlight," said George Joffe, a research fellow and Maghreb expert at Cambridge University, who is not affiliated to the plan.

"It would be mad to pass up this opportunity."

Proposed by the Club of Rome, an international group of experts that suggests solutions to global problems, Desertec became an industrial project last month when reinsurer Munich Re hosted its launch at its headquarters in the Bavarian capital.

"We have a special relationship with climate change: it affects our core business, the insurance of weather-related natural catastrophes, which count among the most expensive losses we have to bear," said Peter Hoeppe, Head of Munich Re's Geo Risk Research department.

Emissions goals

Many European governments aim to cut their greenhouse gas emissions by 80% below 1990 levels by 2050.

Desertec's backers say it would also be a positive gesture from the developed world to countries of the Middle East and North Africa, which stand to suffer most from the more frequent droughts and desertification blamed on global warming.

They have yet to draw up a business plan or specify how it will be funded but hope to recruit shareholders and partner companies from a variety of countries.

Desertec officials say the Sahara could one day deliver 15% of Europe's electricity, but expect the plan to advance in small stages with completion not before 2050.

Supporters of more established solar energy technology, such as photovoltaic cells, argue decentralised generation will prove more popular as falling prices make the heavy infrastructure needed for CSP unviable.

They also think European governments, which already accept the risk of importing energy from north African countries such as Algeria would, given the choice, opt for the security of producing renewable energy within their own borders.

"Sahara power for northern Europe is a mirage," said Hermann Scheer, a member of Germany's parliament and head of the European Association for Renewable Energy.

"Those behind the project know themselves that nothing will ever come out of this," said Scheer, an architect of renewable energy policy in Germany, which included a strong emphasis on photovoltaic technology.

Scheer said the costs of Desertec were being downplayed artificially and its technical capabilities over-estimated.

Desertec would need 20 or more efficient, direct-current cables each costing up to \$1 billion to transmit electricity north beneath the Mediterranean.

CSP installations placed in the Sahara generate around 30% more power per area than in southern Spain, according to Morocco's renewable energy agency CDER.

"Desertec can help reduce emissions in Europe and foster economic and social development in northern Africa, so everyone loves this project," said Santiago Siage, head of Desertec consortium member Abengoa Solar.

Abengoa is developing installations combining CSP with combined-cycle gas power generation in Morocco and Algeria.

Southern countries that import most of their energy like Morocco, Tunisia and Jordan would also benefit from Desertec.

Morocco buys in 96% of its energy and subsidises fuel to make it more affordable for the poor, a massive drain on state resources that could be used to fight poverty and bring services to isolated rural areas.

The Moroccan government says Desertec could solve Morocco's energy dependency and leave plenty of power for Europe.

"Morocco doesn't have even 1% of Europe's energy consumption, so let's be realistic," said Said Mouline, the head of Morocco's renewable energy agency. "We would be generating enough power for us, and for export, for the next 100 years."

Exploitation?

Among hazards facing the scheme are the fact that Desertec would need tight co-ordination between governments to succeed, yet Maghreb states have tried and failed for two decades to integrate their economies and deepen political ties.

The border between Morocco and Algeria is shut and relations are poisoned by a disagreement over the Western Sahara.

Morocco says it has already identified sites to place the curved solar mirrors, not deep in the Sahara but in populated areas just north of the desert to ensure a supply of water to clean mirrors and cool turbines.

Algeria has the biggest chunk of desert and private Algerian firm Cevital has signed up for Desertec, but Africa's second-largest country is isolated and struggling to reform a Soviet-style economy after a brutal civil conflict in the 1990s.

The government has tightened terms on inward investment and says it will only work with Desertec if it allows partnerships between Algerian and foreign firms and a transfer of technology.

"If these conditions are not met, we are not interested," said Algerian Energy and Mines Minister Chakib Khelil. "We don't want foreign companies exploiting solar energy from our land."

Analysts play down the risk to Desertec's infrastructure posed by Al Qaeda-aligned rebels based in Algeria, saying investment risks pose a far bigger problem.

"There is the risk of expropriation of assets, renegeing on licence agreements, corruption and bureaucratic red tape which could stop things getting off the ground," said Henry Wilkinson of Janusian Security Risk Management.

Wolfram Lacher of Control Risks consultancy agreed: security risks can be managed, but the project could become entangled in broader talks between the EU and north Africa on energy, investment and trade.