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Renewable energy sources and energy efficiency: a key role in achieving global carbon dioxide emissions targets

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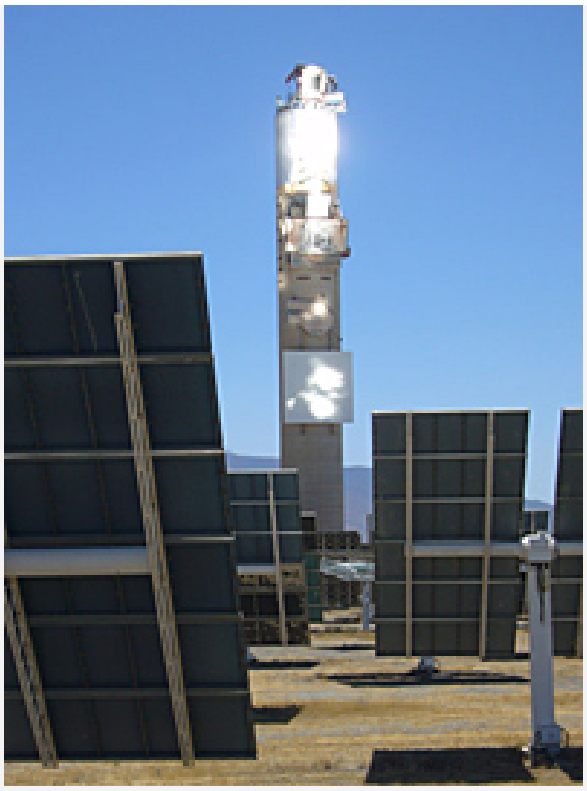
The potential of renewable energy sources is undervalued

DLR presents study commissioned by the German Federal Environment Agency

The potential of renewable energy sources and energy efficiency measures has so far been undervalued in global energy scenarios. This is the conclusion reached by a research study run by the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) on behalf of the German Federal Environmental Agency (Umweltbundesamtes; UBA). The study reveals numerous ways in which the carbon dioxide emissions of the energy sector could be significantly reduced in the future.

Worldwide, according to the authors of the study, "Regarding the role and potential of renewable energy sources and energy efficiency measures in global energy provision, there is a significant as yet unexploited potential for the use of renewables and increased energy efficiency, as well as changes in behaviour. But this potential can only be realised if renewables and energy efficiency measures are further developed. Above all, the political, economic and infrastructural obstacles to such development must be overcome." DLR coordinated the study as a collaboration with Ecofys GmbH and the Wuppertal Institute for Climate, the Environment and Energy.

The technical potential is twenty times present requirements



Solar tower power plant: electricity generation using sunlight

The technical potential of renewable energy is twenty times present consumption. The greatest potential worldwide for electrical power production lies in solar technologies, including solar-thermal power plants and photovoltaics. The study also predicts that the costs of all renewable energy technologies for electrical power generation (with the exception of water power) will fall considerably over the next twenty years. Given that the cost of fossil fuels and carbon dioxide emissions will continue to grow, the majority of renewable electrical power technologies will be highly competitive by 2030.

The study also highlights the considerable potential for increased energy efficiency: increasing efficiency could reduce the primary energy demand by more than half by 2050 in comparison to a 'business as usual' scenario. More than 50 percent of such measures could even be self-financing.

Many scenarios undervalue the potential of renewable energy

The researchers from the DLR Institute for Technical Thermodynamics and their partners also analysed current energy scenarios in the study. According to their results, in most scenarios, the potential of renewable energy is undervalued. These scenarios do not reveal transparently what is holding back the development and implementation of renewable energy sources and energy efficiency measures.

In future scenario analyses, efforts should be made to document more transparently the underlying assumptions and their limitations. In order to improve the predictive value of global energy scenarios, the study's authors are currently setting out a regionally-differentiated, consistent global inventory of renewable energy resources, in a follow-up study which will run to the end of 2010.

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