

Energy consumption, use of solar energy technologies and policies to support solar energy in African countries

Martin Meyer-Renschhausen (Hochschule Darmstadt)

African countries enjoy excellent opportunities for the use of solar energy and of other renewable sources of energy such as wind power and geothermal energy. Even so, solar energy is little used in most African states. However, with soaring prices of fossil fuels and increasing power outages there are signs of a change.

Large-scale projects such as DESERTEC have already raised much interest in Germany and in other European states, but this is yet only one of the many possible ways of developing the solar potential in Africa.

The **project aims** at documenting the various strategies followed by African countries toward the use of solar energy (and of other renewable energy technologies), depending on the state of their respective energy economies (as regards rural electrification, the overuse of the biomass potential, the scarcity of power generation plants, the bottlenecks in power lines and power distribution networks etc.); and at an evaluation of the efficiency achieved by these strategies.

Our **basic hypothesis** is that the strategies followed differ strongly depending on the starting conditions and on the local constraints. States with a low level of rural electrification will tend to support primarily decentralized solar energy generation technologies (Solar-Home-Systems, SHS; off-grid energization). States having a high level of electrification but lacking the appropriate power generation capacities will give more priority to large on-grid plants. In addition, programs exist also to support the production and the use of solar water heaters (SWH).

The implementation of these strategies encounters a number of obstacles. In the area of on-grid PV-plants, these are mostly related to high investment cost, low feed-in prices, and to the lack of standard grid access contracts etc.

As to **our method**, the study will consist of three stages. In the first stage, we will collect and evaluate the available data on energy generation and consumption in the African countries. This survey will rely to a large extent on the data from the World Bank and will provide a general picture of the starting situation from the point of view of energy management. In a second stage, we will carry out an on-depth study of the market constraints and of state strategies aimed at supporting energy generation in 5 countries spanning a wider range of starting situations and local constraints (South Africa, Namibia, Kenya, Ghana and Morocco). The data collection in this second stage will involve a survey of the scientific literature and of state documents, as well as personal interviews with experts, participation to workshops etc. In the third stage, experts from a more comprehensive list of African countries will be sent a standardized on-line questionnaire concerning the situation of energy consumption and management in their respective countries.