



Solar Energy Supply Models for Smart Cities and Townships

Deepak Kumar

Central University of Karnataka, Gulbarga, Geography, India (deepakdeo2003@gmail.com)

Alternative sources of energy are being pursued in the world today, as the accessibility of fossil fuels and other non-renewable resources are declining. Solar energy offers a promising solution to this search as it is a less polluting energy resource and can easily be converted into electricity through the usage of photovoltaic systems. It is a clean, pollution free and renewable energy source. Model approaches for a renewable energy supply have been developed and demonstrated to meet the energy requirements of rural people, while raising economic productivity contributing to a sustainable improvement in living conditions in rural areas. These also provide inputs for further rural energy interventions and they reduce carbon emissions by focusing on technologies not based on fossil fuels. Providing access to electricity in rural areas of India is a major challenge. The fuel is generally of meagre quality, and energy is used inefficiently; the power supply is unreliable and access to it limited, with about 500 million people in rural areas still unable to benefit from modern energy services. This not only has an adverse effect on economic productivity; more importantly, it also affects people's quality of life and is having a strong impact on the environment. The unsustainable use of locally sourced biomass and an increasing dependence on fossil fuels are causing environmental degradation at local (land degradation), regional (air, water and soil pollution) and global levels (greenhouse gas – GHG emissions contributing to climate change). At the same time, locally based measures that use renewable energies to secure the rural power supply are opening up new opportunities for economic productivity while also reducing GHG emissions and local pollution. The purpose of the Rural Energy Supply Models (RESM) is to provide a qualified tool as a guide for governments, business, experts and financing organizations. It is intended to help bridge remaining knowledge gaps on suitable models for energy supply in rural areas. By presenting best practices in a structured format, this tool can offer valuable support in the preparation of future projects for rural power supply using renewable energy. RESM accumulates the characteristics, model-specific advantages, problems and success factors for different Rural Energy Supply models, illustrated with real-world examples.