Renewable Energy Applications for Freshwater Production

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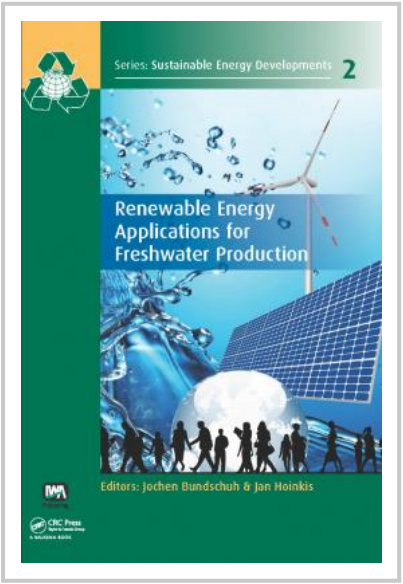

Worldwide, many regions have a great potential to cover part of their pressing water needs by renewable energy powered water treatment processes using either thermal or membrane based technologies. Not only arid and semiarid regions are increasingly exposed to water shortage but also many other regions face a limitation of freshwater resources either by increasing contamination of surface water bodies and/or groundwater resources unsuitable for drinking and irrigation purposes either due to their high grade of mineralization or their contents of toxic components as e.g. arsenic, which affects worldwide the drinking water of over 200 million of people. In many areas without centralized water supply, treatment techniques using locally available renewable energy resources such as wind, solar and geothermal can provide an economical, social and environmentally sustainable option for clean water production from seawater and from highly mineralized or otherwise unsuitable ground- and surface water.

Renewable Energy Applications for Freshwater Production provides an overview on possible cost-efficient techniques and application opportunities for different scales and shows why the implementation of these technologies faces numerous technological, economic and policy barriers and gives suggestions how these hurdles can be overcome. Costs of novel treatment units using renewable energy sources are discussed and compared with those of other technologies for clean water production considering external costs, such as environmental and social costs which are caused by using fossil fuel based technologies. Energy efficiency is highlighted since it is of special importance in systems that are to be powered by renewable energy. Moreover applications of water supply systems providing water in emergency condition are discussed.

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