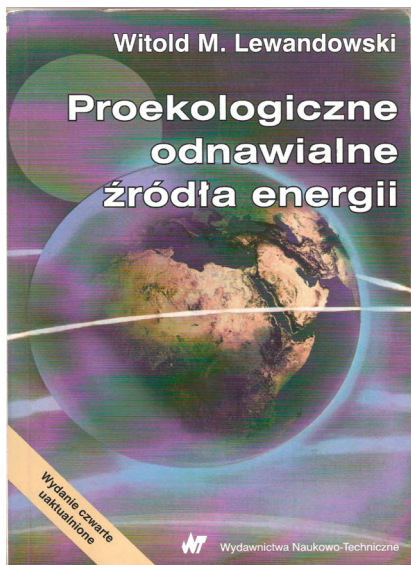


Witold M. Lewandowski, *Greening renewable energy sources*,  
Scientific and Technical Publishing House, Warsaw 2010, 432 p.



The reviewed book in discusses, a very wide range of conventional energy, the impact on the environment and indicates its modernization and use of new, non-conventional renewable energy sources as a solution that would inhibit further degradation of the environment. Its author is a great expert on the depicted subject, which is why even the most complex issues could be presented in an interesting way.

In terms of the content, the publication is very broad. In the first chapter the author described the current state of the environment. He discussed herein the conventional energy and its impact on the environment and the advantages and disadvantages. Here he also described new trends in conventional power and nuclear energy. In the second chapter the author described renewable energy sources. He offered here historical background and distribution of RES and discussed the technical possibilities of their use, development forecasts, regulations and action plan of the European Union in the field of renewable energy. Then he discussed water resources in the world and in Poland and reported their hydroelectric potential. Described here were also large and small hydropower plants, and less conventional solutions which include: tidal energy, wave energy, marine current energy, the energy of diffusion and the PRO and RED methods. In the fourth chapter the author described the wind, handed its historical background and the advantages and disadvantages. He also focused on discussing offshore wind farms and small wind turbines. In the fifth chapter the author discussed solar energy. He then

described the use of passive systems, heat conduction, convection, radiation and convection, heat transfer, and passive heating and cooling of buildings and the storage of heat in them. In the seventh chapter he presented the active use of solar energy systems, which are solar collectors. Here he discussed solar energy resources in Poland, the construction of solar collectors, their selection, economic and environmental aspects of the use and the latest solutions. In the eighth chapter he described the active systems for solar energy conversion, i.e. ponds and solar chimneys. Then he reached into the basics of thermodynamics to discuss methods of processing solar energy to work. In the tenth chapter the author discussed the low-temperature thermal energy of the seas and oceans. Later in the book the historical use of geothermal energy is presented and its resources, uses, impact on the environment and the technical and economic issues described. The current state of Polish geothermal energy is also presented there. In the twelfth chapter the author discussed systems supporting the use of energy from renewable sources. Then he presented the historical use of heat pumps, their principle of operation, the division, economic effects of their application and examples of use in Poland. In the fourteenth chapter he described the photovoltaic cells. He discussed here the history of photovoltaic cells, their structure, principle of operation, advantages and development strategy, including hybrid solutions. Then he characterized biomass, its energy potential, energy use and the method advantages and disadvantages. In the sixteenth chapter the mechanism of biogas and its technology acquisition, development, enrichment, purification and conversion was described. The author took into account here biogas from wastewater treatment plants, landfills and farms. In the seventeenth chapter the author concentrated on the fuel cell. He offered here the historical use, principles of operation, classification, design solutions and application. In the eighteenth chapter he discussed properties of hydrogen, the method of its preparation, storage, and use of the latest advantages and disadvantages. Then he presented a method of saving heat, electricity and saving lighting, water and consumer goods.

In my opinion the book "Greening renewable energy sources" is an extremely valuable position on the Polish market, for both students of technical universities in the fields related to engineering and environmental protection, as well as environmentalists and engineers in contact in his work with the problems of the use of renewable energy sources, will find something for themselves.

Małgorzata Piaskowska-Silarska