

This book addresses the main characteristics of the emerging generation of technologies which will be employed to provide energy for the power grid over the next 20 years.

It includes a discussion of solar energy in its various forms, such as photovoltaic, thermal and thermodynamic energy conversion, taking into account the various issues associated with the connection of these solar plants to the grid. Wind technologies are today in full development and the chapters dedicated to this technology describe the state of the art, taking into consideration the consequences of adding large quantities of this intermittent energy source into power grids, one of which may be wide disturbances. Energy from the sea completes the overview of this type of energy source, with a chapter on very small hydraulic plants which will become of increasing interest as fossil fuels become more and more expensive.

The volume continues with an analysis of geothermal energy along three lines: heat pumps, heat, and electric energy generation. Finally, energy from biomass, which is also becoming of great interest due to the high cost of fossil fuels, is examined. This part of the book provides a wide-ranging description of biofuels and biogas and gives special focus to sources of energy from wood, as a substitute for gas or oil energy heating.

Jean-Claude Sabonnadière is Emeritus Professor at the Institut National Polytechnique de Grenoble, France.