introduction

The World Energy Assessment provides analytical background and scientific information for decision makers at all levels. It describes energy's fundamental relationship to sustainable development and analyses how energy can serve as an instrument to reach that goal. This overview synthesises the key findings of the report, which is divided into six parts.

Part I outlines the institutional framework, particularly at the United Nations level at which sustainable energy development is discussed, updating previous information to include the important decisions taken in Johannesburg in 2002 at the World Summit on Sustainable Development.

Part II provides the basic facts concerning production of energy carriers and distribution and use of energy, taking 2001 as the reference year. The facts illustrate the heterogeneity among regions in resources availability and energy use.

Part III considers the linkages between the current energy system and major global issues, including poverty alleviation, health, environmental protection, energy security, and the improvement of women's and children's lives. To meet objectives in these areas, major changes in local, regional, and global energy systems are needed.

Part IV examines the energy resources and technological options available to meet the challenges identified. It concludes that physical resources are plentiful enough to supply the world's energy needs through the twenty-first century and beyond, but that their use may be constrained by environmental

and other concerns. Options to address these concerns through greater energy efficiency, use of renewable energy sources, and next-generation technologies – are then analysed. The analysis indicates that the technical and economic potential of energy efficiency measures is under-realised, and that a larger contribution by renewables to world energy use is already economically viable. Over the longer term, a variety of new renewable and advanced energy technologies may be able to provide substantial amounts of energy safely, at affordable costs, and with near-zero emissions.

Part V synthesises and integrates the material presented in the earlier parts by considering whether sustainable futures – which address the issues discussed in part III using the options identified in part IV – are possible. The analysis shows that development based on current trends does not meet several criteria of sustainability. However, combinations of resources and technologies exist that would be economically feasible and meet most, if not all, sustainability challenges at the same time. Special attention is given to the challenge of bringing affordable energy to the rural areas of developing countries. It presents approaches to widening access to liquid and gaseous fuels for cooking and heating and to electricity for meeting basic needs and stimulating income-generating activities. Finally, the special challenges in the transportation sector are analysed.

Part VI analyses policy issues and options that could shift current unsustainable practices in the direction of sustainable development, using energy as an instrument to reach that goal. Creating energy systems that support sustainable development will require policies that take advantage of the market to promote greater energy efficiency, increased use of renewables, and the development and diffusion of cleaner, next-generation energy technologies. Given proper signals, market actors could deliver much of what is needed. However, market forces alone are unlikely to meet the energy needs of poor people, or to protect adequately the environment. Sustainable development demands frameworks (including consistent policy measures and transparent regulatory regimes) to address these issues. ■