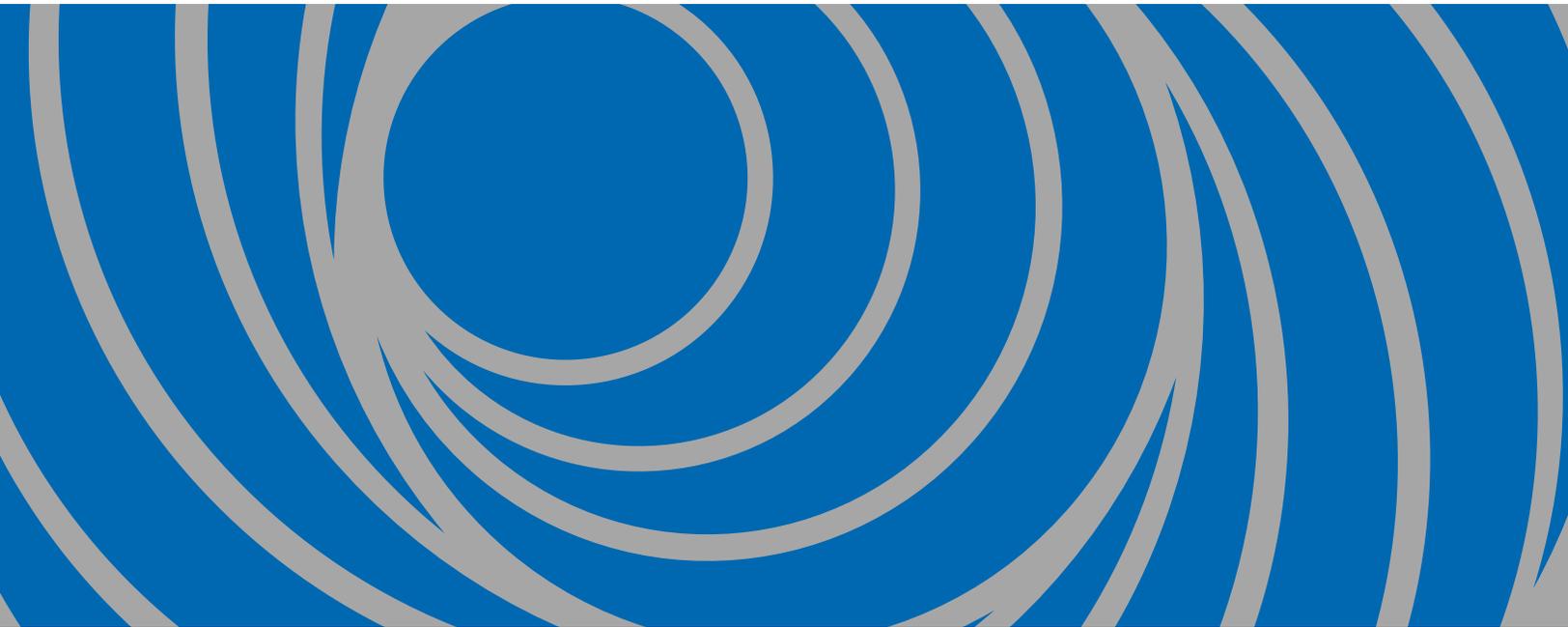




United Nations Development Programme
United Nations Department of Economic and Social Affairs
World Energy Council

World Energy Assessment



overview 2004 Update

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foreword

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In 2002 government leaders, heads of industry, civil society and representatives of United Nations organisations met in Johannesburg at the World Summit for Sustainable Development (WSSD). Held ten years after the United Nations Conference on Environment and Development, WSSD brought discussions on energy to the center of global debate. The resulting Johannesburg Plan of Implementation stresses that access to reliable and affordable energy services facilitates the eradication of poverty. The importance of producing, distributing and consuming energy services in ways that support sustainable development is also emphasised in relation to changing patterns of production and consumption as well as protecting and managing the natural resource base. Energy is, for the first time in an intergovernmental process, directly linked to the achievement of the Millennium Development Goals, an ambitious set of quantified development targets agreed by the international community during the Millennium Assembly in 2000.

We the three sponsoring organizations of the “World Energy Assessment: Energy and the Challenge of Sustainability”, the United Nations Development Programme, the United Nations Department for Economic and Social Affairs, and the World Energy Council are very pleased that energy gained such prominence in these important international discussions. The regional and global discussions leading up to WSSD built heavily on the outcome of the ninth session of the Commission on Sustainable Development (CSD-9) held in April 2001. Providing objective, scientific and technological information on energy trends and issues to inform and support these discussions was the reason that our organisations began collaboration on the World Energy Assessment which was released in 2000



under the Chairmanship of Dr. José Goldemberg.

This publication, which is an update of the Overview of the original World Energy Assessment, has been assembled to reflect current information on energy production and consumption patterns, technology trends and to summarise the important decisions and recommendations concerning energy reflected in CSD-9, WSSD and other international fora. This is particularly important given that the 2006/2007 cycle of the Commission on Sustainable Development will consider energy for sustainable development as well as air pollution/atmosphere, climate change and industrial development.

This will be a key opportunity to focus attention on some of the concrete policy, financing, capacity development, technology and knowledge management approaches that are supporting changes in energy production and use in line with sustainable development goals. It will provide further opportunities to examine distinct regional challenges linked to energy and to address how key energy issues are directly impacting the achievement of development objectives outside the energy sector including, for example, managing and protecting the natural resource base, gender equality, changing unsustainable patterns of consumption and production, and poverty eradication.

More than ever there is urgency to take decisions and implement energy options that accelerate the shift towards sustainable development. Vastly improved access to modern energy services, improved affordability, reliability and greatly enhanced use of technologies that address the challenges of sustainable development are urgently needed.

We believe that energy solutions require joint efforts involving government agencies and policy makers, the private sector and industry, civil society and collaboration within the international development community, including the United Nations system. The challenges of sustainable development are great and the importance of energy in achieving sustainable development goals cannot be overstated. Significant changes in national, regional and global energy systems will be required to meet these challenges. The materials presented represent the views of the contributing authors and have been peer reviewed; they are issued under the supervision of the Editors who are responsible for the content. We remain committed to action on energy for sustainable development and hope you will find this update, prepared under the editorship of Dr. José Goldemberg and Dr. Thomas B. Johansson, helpful in your own considerations on important energy issues. ■

preface

José Goldemberg
Sao Paulo, Brazil

Thomas B. Johansson
Lund, Sweden

May 2004

The World Energy Assessment (WEA) published in the year 2000 – a 500-page document – provides analytical background and scientific information for decision makers at all levels. It describes energy's relationship to sustainable development and analyses how energy can serve as an instrument to reach that goal. The Assessment was based on data and analysis available in 1998.

Since then, important developments have taken place at the inter-governmental, business, and technological levels, the most important of which include:

- The United Nations General Assembly adopted the Millennium Development Goals (MDGs) in 2000. Although no explicit goal on energy was adopted, access to energy services is a prerequisite to achieving all of the MDGs.
- The ninth session of the Commission on Sustainable Development (CSD-9) in 2001 was an important landmark in the process leading to the World Summit on Sustainable Development (WSSD) in reaching a consensus that the current energy situation is not sustainable.
- The WSSD met in September 2002, and its Plan of Implementation made specific recommendations on energy access to facilitate the achievement of the Millennium Development Goals and established a clear link between energy and the eradication of poverty.
- A dramatic increase in interest in the reform and design of energy markets to widen access to energy services and to provide public goods is occurring.
- Electricity crises in California and Brazil increased doubts on the wisdom of liberalisation/privatisation without a greater role for regulation to set objectives, boundaries, and rules for the market.
- The trend towards using natural gas for power generation and road transport has accelerated, and the focus on the availability of natural gas and the infrastructure to transport it has increased as well.

- Some fossil fuel corporations as well as some governments have shown strong interest in exploring the viability of a hydrogen economy and promoting carbon sequestration to reduce greenhouse gas emissions.
- Increasing interest in the expanded use of renewable energy has been demonstrated in a range of settings:
 - The Group of Eight (G8) Renewable Energy Task Force Report issued in 2001 stressed the need to give priority to efforts to renewable energy markets, particularly in the industrialised countries. This would lead to a decrease in costs and thus open the way for use of renewable energy in developing countries.
 - At WSSD, many partnerships between industrialised and developing countries were formed to promote sustainable development with a focus on energy.
 - A number of countries – including Spain, Germany, Brazil, and some states in the United States – have adopted successful laws and regulations designed to increase the use of renewable energy sources.
- In the period 1998–2003, there were increased concerns about energy security (both physical security and security of supply), further emphasised by the September 11, 2001, events in New York and Washington, as well as the war in Iraq.
- Concerns have been raised about the local, regional, and global environmental and social impacts of the use of fossil fuels, as well as of large hydro and mining projects.
- Power failures along the North American eastern seaboard and in England, Sweden, and Italy illustrated the strong dependence of industrialised countries on reliable power networks.
- Progress has occurred in the ratification of the Kyoto Protocol so that it could enter into force upon ratification by Russia. The 2001 Third Assessment by the Intergovernmental Panel on Climate Change (IPCC) concluded that the global mean surface temperature has increased by 0.6 degrees Celsius during the last two centuries “with increasing evidence that most of the warming observed over the last fifty years is attributable to human activities”.
- Finally, there is an increasing interest in energy policies and measures that address many, if not all, challenges related to energy simultaneously.

These developments and others led the institutions that established the World Energy Assessment to ask us to update the Overview to that document, taking into account developments since it was finalised in late 1999. The result is the analysis presented here.

The 2004 Overview provides a comprehensive view of energy for sustainable development issues and options. The basic objective of the WEA is maintained, that is, to provide an assessment of issues and options related to energy for sustainable development and to provide information on alternative global experiences. The basic approach developed and presented in the WEA is maintained as well. However, the data and analysis have been updated to reflect new information available through early 2003. ■

sponsoring institutions

The **United Nations Development Programme (UNDP)** is the UN's global development network, advocating for change and connecting countries to knowledge, experience and resources to help people build a better life. UNDP is on the ground in 166 countries, working with them on their own solutions to global and national development challenges. World leaders have pledged to achieve the Millennium Development Goals, including the overarching goal of cutting poverty in half by 2015. UNDP's network links and coordinates global and national efforts to reach these Goals. UNDP's focus is on helping countries build and share solutions in five major areas including democratic governance, poverty reduction, energy and environment, crisis prevention and recovery, and HIV/AIDS.

The **United Nations Department of Economic and Social Affairs (UNDESA)** facilitates intergovernmental processes and, through its Division for Sustainable Development, services such bodies as the U.N. Commission on Sustainable Development and U.N. Committee on Energy and Natural Resources for Development. UNDESA also undertakes, among other things, statistical and analytical work to monitor the environment and sustainable development, provides policy and technical advisory services, and implements technical cooperation projects at the request of developing countries in the followup to the 1992 Earth Summit.

The **World Energy Council (WEC)** is a multi-energy, nongovernmental, global organisation founded in 1923. In recent years, WEC has built a reputation in the energy field through its studies, technical services, and regional programmes. Its work covers long-term energy scenarios, developing country and transitional economy energy issues, energy financing, energy efficiency and liberalisation policies, and environmental concerns. Through its member committees in close to one hundred countries, it has encouraged the participation of private industry throughout the editorial and consultative process of the World Energy Assessment.

For more information on the activities and publications of the three establishing organisations, please visit the following websites – UNDP: www.undp.org/energy; UNDESA: www.un.org/esa/desa.htm; WEC: www.worldenergy.org. ■

acknowledgements

The publication of this World Energy Assessment Overview: 2004 Update would not have been possible without the dedicated efforts of many people, starting with the contributors as well as those who represented the sponsoring institutions. UNDP, UNDESA and the WEC greatly appreciate their efforts.

The editorial process was skillfully guided by José Goldemberg of Brazil and Thomas B. Johansson from Sweden. Their extensive experience in energy, policy issues, and international relations has been invaluable. Their consistent personal and professional commitment to advancing the global agenda on energy for sustainable development, including the completion of this publication, has provided great leadership in the international community. We are also deeply grateful to the contributors for their dedicated efforts in preparing and reviewing this publication under a tight schedule. The contributors are: Dennis Anderson, Suani T. Coelho, Gerald Doucet, Irene Freudenschuss-Reichl, Michael Jefferson, Eberhard Jochem, Stephen Karekezi, Hisham Khatib, Susan McDade, Alan McDonald, José Roberto Moreira, Nebojša Nakićenović, Amulya K.N. Reddy,

Hans-Holger Rogner, Kirk R. Smith, Wim C. Turkenburg, Gill Wilkins, Robert H. Williams as well as both José Goldemberg and Thomas B. Johansson.

Project coordination for this publication was provided by Susan McDade and Khalid Husain of UNDP's Sustainable Energy Programme with the continuous support of Maria Castillo and Martha Barrientos.

We appreciate the professional efforts of the entire World Energy Assessment team, particularly Rosemarie Philips, text editor, and Vilma Bortoleto for secretarial support in São Paulo. Special thanks to Julia Dudnik-Ptasznik for the layout and production of this publication. The editors also gratefully acknowledge the comments from Kathleen Abdalla, François Ailleret, S.C. Bhattacharya, Adrian Bradbrook, Bill Chandler, Martha Duenas, J. Gururaja, Günther Hanreich, Ines Havet, Frank von Hippel, Arun Kashyap, Gerald Leach, Amory B. Lovins, Kui-Nang Mak, Eric Martinot, Lars Nilsson, Sara Nordstroem, Cynthia Page, Joel Posters, Antonio del Rosario, Jamal Saghier, Minoru Takada, Sergio Trindade and Raymond Wright. ■