



# WORLD ENERGY OUTLOOK

1994 EDITION



INTERNATIONAL ENERGY AGENCY



## **INTERNATIONAL ENERGY AGENCY**

The International Energy Agency (IEA) is an autonomous body which was established in November 1974 within the framework of the Organisation for Economic Co-operation and Development (OECD) to implement an international energy program.

It carries out a comprehensive program of energy co-operation among twenty three<sup>1</sup> of the OECD's twenty four Member countries. The basic aims of the IEA are:

- i) co-operation among IEA participating countries to reduce excessive dependence on oil through energy conservation, development of alternative energy sources and energy research and development;
- ii) an information system on the international oil market as well as consultation with oil companies;
- iii) co-operation with oil producing and other oil consuming countries with a view to developing a stable international energy trade as well as the rational management and use of world energy resources in the interests of all countries;
- iv) a plan to prepare participating countries against the risk of a major disruption of oil supplies and to share available oil in the event of an emergency.

## **ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT**

Pursuant to Article 1 of the Convention signed in Paris on 14th December 1960, and which came into force on 30th September 1961, the Organisation for Economic Co-operation and Development (OECD) shall promote policies designed:

- to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus to contribute to the development of the world economy;
- to contribute to sound economic expansion in Member as well as non-member countries in the process of economic development; and
- to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.

The original Member countries of the OECD are Austria, Belgium, Canada, Denmark, France, Greece, Ireland, Iceland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The following countries became Members subsequently through accession at the dates included hereafter: Japan (28th April 1964), Finland (28th January 1969), Australia (7th June 1971) and New Zealand (29th May 1973). The Commission of the European Communities takes part in the work of the OECD (Article 13 of the OECD Convention).

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<sup>1</sup>IEA participating countries are: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, the United States. The Commission of the European Countries takes part in the work of the IEA.

## FOREWORD

The energy industry operates on a long term basis. Because of the longevity of energy using equipment, the level of energy consumption today is to a large extent determined by decisions, on the energy features of this equipment, taken many years or even decades ago. Similarly, today's energy supply is largely the result of investments undertaken in the 1970s and 1980s. Thus, it is important that possible future energy developments, and their environmental consequences, be taken into account to the greatest extent possible in the process of formulating energy policy and making investment decisions. It is for the purposes of aiding this process that the IEA has produced its own independent long term global energy outlook. It must be stressed that such an outlook can only be indicative of the general direction and possible evolution of worldwide energy trends. As the experience of the 1970s shows, it is unwise to attach great significance upon a set of numerical outcomes without considering the underlying assumptions and their concomitant uncertainties.

This book updates the 1993 *World Energy Outlook* reference case for medium and long term prospects for world energy demand and supply. It also includes a series of in depth regional studies on the long term energy outlook and key issues of the OECD Pacific, East Asia, China and Central and Eastern Europe.

This work is published under my responsibility as Executive Director of the IEA and does not necessarily reflect the views or policies of the IEA or its member countries.

**Helga Steeg**  
**Executive Director**



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### **Comments and Suggestions**

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## EXECUTIVE SUMMARY

In this 1994 edition of the *World Energy Outlook*, the International Energy Agency updates its projections of world energy and oil demand to the year 2010. The *Outlook* also presents the findings of four in-depth regional studies undertaken in 1993: the OECD Pacific region, East Asia, China and Central and Eastern Europe.

### Key Assumptions of the World Energy Outlook

The reference case projections are based upon an assumed average IEA import price of oil of \$17 per barrel in 1994 and 1995 (in constant US \$1993), rising to \$28 per barrel by 2005, after which it remains flat. Gas prices in the US are assumed to rise to \$3.30 per thousand cubic feet by 2005; in Europe and Japan they are assumed to rise in line with oil prices. Coal prices are expected to remain relatively stable in real terms with the exception of the minemouth price in the U.S. which rises by about 20 per cent over the outlook period.

Macroeconomic growth in the OECD is assumed to remain modest in the early years of the outlook as a result of the continuing recession in Japan and Europe. Over the entire period to 2010, the OECD Pacific region grows at an annual average rate of 2.6 per cent, North America at 2.3 per cent, and Europe at 2.2 per cent. In the countries of the former Soviet Union (FSU) and Central and Eastern Europe (CEE), economic growth is assumed to resume in the second half of this decade, and GDP will be almost 20 per cent above its 1990 level by 2010. Economic growth is strongest in the rest of the world (ROW): China expands at 7.9 per cent per annum on average (slower than in the recent past), and the East Asian region grows at an average annual rate of 6.2 per cent.

Despite the momentous events occurring in the countries of the former Soviet Union, the reference case assumes that the impact on western European and world oil markets will continue to be slight. Declining oil consumption in the countries of the former Soviet Union is expected to offset the continued decline in production over the short to medium term,