

Preface

This report is the first attempt to project long-term energy demand and supply for Asia and the Pacific. It provides the energy demand and supply outlook of the regional members of the Asian Development Bank (ADB) up to 2030. *Energy Outlook for Asia and the Pacific* complements *Energy Statistics in Asia and the Pacific (1990–2006)*, which shows historical energy trends and energy balance between 1990 and 2006, and is published under a separate volume.

Both the *Energy Statistics* and *Energy Outlook* reports are the products of an ADB-funded regional technical assistance grant (RETA 6322: Energy Sector Strategy and Development). Energy supply and energy security are among the strategic concerns in Asia and the Pacific, geared toward achieving inclusive and sustainable economic growth and social development, and addressing the climate change challenge. Effective policy making and implementation call for comprehensive and timely availability of vital energy statistics as well as the energy outlook across the region.

Energy Outlook aims to estimate, for each of ADB's regional members, the future demand for energy, supply options to 2030 for a business-as-usual scenario, investment requirements for meeting this demand, and the resulting carbon dioxide (CO₂) emissions potential associated with increasing energy demand. The study also attempts to identify key issues that need to be considered to mitigate the adverse impacts of the increasing energy demand in the region. With endorsement from the Asia–Pacific Economic Cooperation (APEC) Secretariat and the APEC Energy Working Group, necessary information from the APEC Energy Database has been used for the APEC member economies in Asia and the Pacific. For the non-APEC members, the Institute of Energy Economics of Japan's model was used with economic data from ADB. The energy outlook projected in this volume does not necessarily reflect the views of the government of each member.

Similar to the *Energy Statistics* report, the availability of energy sector information is uneven across the region; some members have well-established energy sector information and others do not, especially the Pacific island economies. More effort should be made to enhance the quality and reliability of long-term energy outlook and analysis for various scenarios. We hope this report will offer ADB regional members in Asia and the Pacific the basis for policy making and development planning necessary to move toward sustainable economic development.



Xianbin Yao
Director General
Regional and Sustainable Development Department

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Definitions

The regional members analyzed in this report are classified by geographical groupings. However the developed regional members (Australia, Japan, and New Zealand) are classified as the Developed Group for the purposes of this report.

- **Central and West Asia** comprises Afghanistan, Armenia, Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan.
- **East Asia** comprises Hong Kong, China; the Republic of Korea; Mongolia; the People's Republic of China; and Taipei, China.
- **The Pacific** comprises the Cook Islands, Fiji Islands, Kiribati, Nauru, Palau, Papua New Guinea, Samoa, Solomon Islands, Timor-Leste, Tonga, and Vanuatu.
- **South Asia** comprises Bangladesh, Bhutan, India, the Maldives, Nepal, and Sri Lanka.
- **Southeast Asia** comprises Brunei Darussalam, Cambodia, Indonesia, the Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Viet Nam.
- **Developed Group** includes Australia, Japan, and New Zealand.

Abbreviations

ADB	Asian Development Bank
APEC	Asia–Pacific Economic Cooperation
APEREC	Asia Pacific Energy Research Centre
ASEAN	Association of Southeast Asian Nations
BCM	billion cubic meters
CO ₂	carbon dioxide
DMC	developing member country
EIA	Energy Information Administration
FSU	former Soviet Union
GCV	gross calorific value
GDP	gross domestic product
GW	gigawatt
IEA	International Energy Agency
IEEJ	Institute of Energy Economics, Japan
IPCC	Intergovernmental Panel on Climate Change
IT	information technology
LNG	liquefied natural gas
LPG	liquefied petroleum gas
KTOE	thousand tons of oil equivalent
kWh	kilowatt-hour
Lao PDR	Lao People’s Democratic Republic
mb/d	million barrels per day
MCM	million cubic meters
Mt CO ₂	million tons of carbon dioxide
MTOE	million tons of oil equivalent
MW	megawatt
NCV	net calorific value
NGL	natural gas liquids
NRE	new and renewable energy
OECD	Organisation for Economic Co-operation and Development
OGJ	Oil and Gas Journal
PPP	purchasing power parity
PRC	People’s Republic of China
PV	photovoltaic
TFED	total final energy demand
TPED	total primary energy demand
TOE	tons of oil equivalent
TWh	terawatt-hour
UNDP	United Nations Development Programme
UNSD	United Nations Statistics Division
WDI	World Development Indicators
WEC	World Energy Council

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