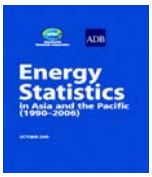
Asia-Pacific
Economic Cooperation

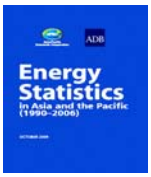
Energy Statistics and Outlook For Asia and the Pacific

Highlights

October 2009



Energy Statistics in Asia and the Pacific (1990–2006)



The total primary energy supply in Asia and the Pacific in 2006 reached 4,007 million tons of oil equivalent (MTOE), increased by 4.9% from 3,820 MTOE in 2005. Despite having 56% of the world's population, the Asia and Pacific region produced only 35% of the world's GDP and consumed 34% of the world's total primary energy supply in 2006.

The region's indigenous energy production in 2006 was only 84% of its total primary energy supply and the region imported 16% of its total energy requirements. Especially, the region depended from outside the region for 63% of its total oil requirements. The region though could be said to be self-sufficient in coal and natural gas in 2006.

Oil and petroleum products accounted for 38.4% of total primary energy consumption in the region in 2006, followed by coal (20.1%), electricity (18.3%), biomass (1.2%), gas (8.5%), and heat (2.5%). The region also consumed 59% of the total coal supply in the world in 2006 but was responsible for only 28% and 19% of the world oil and natural gas consumption, respectively.

On a sectoral basis, the total energy consumption of the residential and commercial sector increased by 1.7% from 690 MTOE in 2005 to 701 MTOE in 2006. The transport sector's consumption grew by 2.1% from 442 MTOE in 2005 to 451 MTOE in 2006 while the industry sector's consumption grew by 6.1% from 2005 to 2006. The industry sector's total consumption of 1,073 MTOE was the largest among all sectors in 2006, with a share of 41.9%. The transport sector's share was 17.6% while share of residential and commercial sectors was 27.4%.

During 1990–2006, the total primary energy supply had an average growth rate of 4.1% per year with the annual 3.5% growth in real GDP over the same period. Especially, coal consumption in the region grew rapidly at 4.9% per year from 1990 to 2006. The world's growth rate during the same period was only 2.0% per year. This is attributed to the rapid growth of electricity consumption that increased at an average annual rate of 5.5%.

Power generation rose by 8.1% from 6,139 terawatt-hours (TWh) in 2005 to 6,638 TWh in 2006. From 1990 to 2006 power generation grew at an average rate of 6.0% per year. Thermal power generation increased by 8.6% from 4,711 TWh in 2005 to 5,116 TWh in 2006. Nuclear power generation grew by 2.9% from 555 TWh in 2005 to 571 TWh in 2006. The hydropower generation rose by 8.9% from 792TWh in 2005 to 862 TWh in 2006. As a result, the share of thermal power generation increased to 77.1%—coal, 57.5%; gas, 13.4%; and oil, 6.2%—followed by hydropower, 13.0% and nuclear, 8.6% in 2006. Despite this rapid growth, the per capita electricity generation of 1,802 kWh in the region was still 37% below world average of 2,873 kWh in 2006.

The region's energy intensity increased from 366 TOE/million $ (constant 2000 prices) in 1990 to 372 TOE/million $ in 2006.

Available at www.adb.org/Documents/Books/Energy-Statistics/default.asp

Energy Outlook for Asia and the Pacific

Energy demand in Asia and the Pacific is projected to increase from 4,025 million tons of oil equivalent (MTOE) in 2005 to 7,215 MTOE in 2030 for a business-as-usual scenario and based on current policies with assumption of the annual 3.5% growth in real GDP over the same period—by about 80% between 2005 and 2030 at an annual rate of 2.4%, which represents a faster rate than the world average growth rate of 1.5%. Energy demand of ADB's developing member countries in the region will grow slightly faster at 2.6% per year through 2030—driven by faster economic growth and infrastructure development.

Nearly 80% of the region's energy needs in 2030 would have to be met by fossil fuels—coal, oil and natural gas—driving the growth in CO_2 emissions.

Coal will maintain the biggest share in primary energy demand at 38.3%. As a result of energy efficiency improvement in the power and industry sectors, coal is projected to grow relatively slow at 2.1% per year.

Increased demand of oil at 2.2% is not likely to be met by production in the region. Overall needs of oil import within the region will increase from 13.2 mb/d in 2005 to 26.0 mb/d in 2030.

Natural gas will register an annual growth rate of 3.6% through 2030—the fastest growth rate among all fossil fuels—due to its ease of use and lower environmental burden. The region as a whole will marginally become a net importer of natural gas by 2015 and about 24% of natural gas demand would have to be met by imports in 2030.

Nuclear energy demand will increase at 5.1% per year through 2030—the fastest annual growth rate by energy type due to the expansion of nuclear installed capacity in PRC.

New and renewable energy (NRE) will represent the fourth largest share, 11.2% in 2030. In view of the replacement of biomass with commercial energy sources, NRE is projected to increase slowly, at an annual rate of 1.3%.

Electricity demand will increase at 3.4% per year driven by the increases in income level and infrastructure development.

CO_2 emissions in Asia and the Pacific are forecast to increase from 10,065 million tons of CO_2 in 2005 to 17,763 million tons in 2030, growing at 2.3% per year.

To meet the rapid energy demand growth, Asia and the Pacific will require a cumulative investment of between $7.0 trillion and $9.7 trillion in the energy sector. Cooperation among the regional members will be essential towards enhancing energy security and sustainable development through sharing policy information, facilitating energy trade, and conducting joint energy projects.

Available at www.adb.org/Documents/Books/Energy-Outlook/default.asp

Scope of the Study

Rapid economic growth in developing Asia has been generating high level of demand for energy. Energy supply and energy security are among strategic concerns in Asia and the Pacific geared toward achieving inclusive and sustainable economic growth, social development, and addressing the climate change challenge with a low-carbon future. Effective policymaking and implementation call for comprehensive and timely availability of vital energy statistics as well as the energy outlook across the region.

In response to these challenges, the Asian Development Bank (ADB) funded this study in collaboration with the Asia-Pacific Economic Cooperation that aimed to compile energy production, trade, transformation, and consumption data of 48 ADB regional members in Asia and the Pacific, and also to project, for each of ADB's regional members, the future energy demand and supply to 2030 by country, sub-region, and region as a whole, including investment requirements and the resulting CO_2 emissions potential.

The study covers six sub-region groups for the 48 ADB's regional members based on geographical location for ADB's developing member countries, namely Central and West Asia, East Asia, the Pacific, South Asia, and Southeast Asia; and one group covering the developed countries. The study was undertaken by the Asia Pacific Energy Research Centre of the Institute of Energy Economics, Japan for ADB.

About the Books

Energy Statistics in Asia and the Pacific (1990–2006)
The *Energy Statistics* is the first publication that attempted to consolidate historical energy trends and energy balances of the 48 ADB regional members between 1990 and 2006 in Asia and the Pacific. The energy data are presented in a common format which facilitates comparison among ADB regional members. The *Energy Statistics* provides insights on the recent energy situation of the region and provides a wealth of information for stakeholders inside and outside the region to chart their future course of action in planning for energy investment, sustainable development and poverty alleviation. This publication was also used as the basis in the preparation of the energy demand outlook in the region to 2030.

Energy Outlook for Asia and the Pacific
The *Energy Outlook* is the first attempt to project long-term energy demand and supply for Asia and the Pacific. The study estimates, for each of ADB's regional members, the future energy demand and supply options to 2030 for a business-as-usual scenario, investment requirements for meeting this demand, and the resulting CO_2 emissions potential associated with increasing energy demand. The *Energy Outlook* also attempts to identify key issues that need to be considered to mitigate the adverse impacts of the increasing energy demand in the region—energy access, energy security, energy efficiency, and urbanization and energy demand.