

Deregulation remains an ongoing issue in the Philippines, while increased self-sufficiency and the development of renewable energy technology are becoming increasingly important.

The Republic of the Philippines comprises more than 7000 islands with a total land area of almost 300 000 km². The terrain is mostly mountainous, with narrow or sometimes extensive coastal lowlands. In July 2008, the population was estimated to be in excess of 96 million and the growth rate was put at approximately 2 per cent.

The Philippines has a presidential, unitary form of government (with some modification: there is one autonomous region largely free from the national government), where the president functions as both head of state, head of government and commander-in-chief of the armed forces. The president is elected by popular vote to a single six-year term, during which time she or he appoints and presides over the cabinet.

The political climate can be tempestuous, with President Gloria Macapagal Arroyo weathering several attempts to unseat her since she took office in January 2001, including a rebellion by 300 soldiers, who seized a hotel in Manila in 2003 and demanded that she withdraw from office. However, the event ended peacefully.

The country's economy was, according to 2008 Q3 reports, considered relatively resilient in light of the onset of the current global financial crisis. The gross domestic product (GDP) growth rate for the first three quarters of 2008 averaged 4.6 per cent. The service sector accounts for about half of the Philippine GDP.

Energy Overview

The Philippines has natural gas reserves of 98.58 million m³, according to 2008 estimates, most of which is in its Malampaya offshore gas field. It is estimated that these

reserves could contribute as much as 3000 MW of energy over 20 years. No gas is exported, and the country's natural gas production and consumption was put at 2.1 million m³ in 2006.

Proven crude oil reserves are estimated to be 139 million barrels (December 2006). The country's crude oil imports fell from 78 261 million barrels in 2006 to 74 380 million barrels in 2007, a reduction of some 5 per cent. As a result, the volume of crude processed locally decreased by

2.7 per cent, and the import volume of finished petroleum products rose by 11.4 per cent (41 046 million barrels in 2006 compared with 45 712 million barrels in 2007).

Coal reserves in 2006 were estimated at 236 million tonnes. Production in that year was an estimated 2.36 million tonnes and consumption was an estimated 10.15 million tonnes.

The government has voiced plans to increase the country's level of self-sufficiency by increasing its use of its oil, gas and coal reserves. The development of renewable energy, particularly geothermal, which currently makes up about 17 per cent of the country's power generation by source, is also helping reduce the country's dependency on imported fuels.

There are three power grids in the Philippines: Luzon, Visayas and Mindanao. Of these, Luzon is the largest, catering for about three quarters of the country's needs. Within each grid, there are three types of distribution utility: electric co-operative (EC), private investor-owned utility (PIOU) and local government unit-owned utility (LGUOU).

Electricity Market

The privatisation of the country's National Power Corporation (NPC) continues in accordance with Republic Act 9136 of 2001 (also known as the Electric Power Industry Reform Act [EPIRA]), albeit not as smoothly as the Philippine government wants, according to some reports.

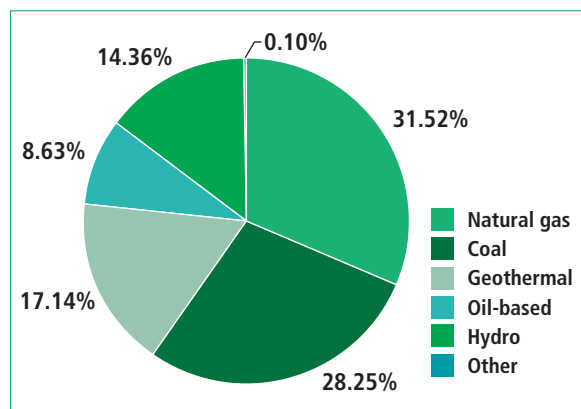
Designed to reduce electricity rates and improve the delivery of power supply to end-users, EPIRA encourages greater competition (and hopefully efficiency) in the electricity industry. The Energy Regulatory Commission (ERC) was created, as a result of EPIRA, to act as the governing body for a restructured power industry, and oversee its separation into generation, transmission, distribution and supply sectors.

All of the NPC's electrical transmission functions were transferred to what was then a new company, called the National Transmission Corporation (TransCo), which has since been acquired by a consortium called the National Grid Corporation, according to reports in January 2009.

Meanwhile, the government's Power Sector Assets and Liabilities Management (PSALM) corporation, also created from EPIRA, has begun auctioning power plants and had, at the time of producing this review, set an auction date of 20 February 2009 for the

Power generation by source, 2007

Source: Philippine Department of Energy



Philippines

Gross power generation by utility (2007)

UTILITY	Generation (MWh)	% share
NPC	15 151 018	25.42
NPC-SPIUG	437 373	0.73
NPC IPP	26 155 929	43.88
MERALCO IPP	14 413 361	24.18
Non-IPC	3 454 109	5.79
Total Generation	59 611 790	100.00

Source: Philippine Department of Energy

Growth in peak demand by grid, between 2006 and 2007

GRID	2006 (MW)	2007 (MW)	% CHANGE
LUZON	6466	6643	2.74
VISAYAS	1066	1102	3.38
MINDANAO	1228	1241	1.06
PHILIPPINES	8760	8986	2.58

Source: Philippine Department of Energy

coal-fired Sual (1000 MW) and Pagbilao (700 MW) plants. Under EPIRA, PSALM will select independent power producer administrators (IPPAs) through bidding. EPIRA also resulted in the creation of the Philippine Electricity Market Corporation (PEMC), the governing body for the Wholesale Electricity Spot Market (WESM).

Gross power generation saw an increase of some five per cent, from 56 784 GWh in 2006 to 59 612 GWh 2007. Of this total power in 2007, natural gas-fired power plants made the greatest contribution at 31.52 per cent (18 789 GWh), followed by coal fired at 28.25 per cent.

Generation from oil-based power plants increased by 10.36 per cent, from 4665 GWh in 2006 to 5148 GWh in 2007, to represent 8.63 per cent of the total mix. A significant factor here was the full operation of oil-based power plants in the Luzon grid during July 2007, a month during which the Pagbilao and Sual coal-fired power plants were on outages, due to fuel constraints.

Hydroelectric power generation fell by 13.84 per cent, from 9939 GWh in 2006 to 8563 GWh in 2007, to represent 14.36 per cent of the power mix. This fall was attributed to low rainfall during the summer.

Generation from geothermal power plants decreased from 10 465 GWh in 2006 to 10 215 GWh in 2007, a fall of 2.39 per cent, due to outages experienced by the Macban, Bacman and Tiwi geothermal plants in Luzon. Most outages were due to deactivated shutdowns as a result of steam deficiency or isolation resulting from transmission/network problems. Geothermal's share in the power mix in 2007 was 17.14 per cent, down compared with its 18.43 per cent share in 2006.

Other renewable energy contributed only 0.10 per cent of gross generation in 2007, but this was up on its contribution in 2006, and the Department of Energy (DOE) is predicting that biomass, solar, wind and ocean energy will play increasingly important roles in coming

an estimated 12 105 MW (of which the Luzon grid will see predicted demand of 8884 MW). Annual demand by 2016 is predicted to be almost 69 000 GWh, compared with the 47 337 GWh of 2007.

Renewable energies will play a critical role in meeting this demand. The Philippine Renewable Energy Bill was passed in 2008, after more than 18 years of deliberation. It is hoped that the bill will boost the country's energy self-sufficiency to a target level of 60 per cent by 2010.

Based on DOE projections, if renewable energy sources could supply an additional 2500 MW of total power supply in the next ten years, the country could achieve \$1.2 billion in energy savings over the same period.

Infrastructure Investment

According to the latest DOE figures, to meet the projected increase in energy requirements, the distribution utilities are planning for 23 414 circuit km of lines to be rehabilitated and/or upgraded and for a further 14 249 km to be constructed. Also, some 6478 MVA of substation capacity will be required, of which the Luzon grid will need an estimated 4415 MVA. These projects are predicted to require an investment of \$2.3 billion.

Planned power plant developments, which will require approximately \$600 million, include a 200 MW coal-fired plant in Naga City, Cebu, and a 29 MW thermal plant and 15 MW diesel plant in Masbate province. However, following the long-awaited passing of the Renewable Energy Bill, most interest seems to be in renewable energy technology. For example, at least six new wind power projects are expected to start in 2009. These could account for almost 200 MW of generation (from an investment of around \$500 million), but the total potential wind power capacity for the Philippines has been put at 7404 MW across 1038 sites surveyed nationwide.

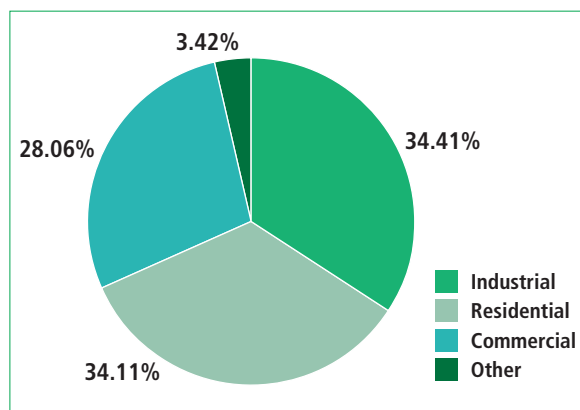
Future Trends

The Philippines is working hard towards self-sufficiency – with heavy emphasis on renewable energy. Fortunately, the country's geography works heavily in its favour. It is currently the world's second largest generator of power from thermal energy after the US, but its plan to almost double thermal power generation during the next ten years could see the country take the lead. Wind and hydro (including tidal) power will play important roles.

Another offshoot of EPIRA, the Countrywide Electrification and Missionary Service Company (CEMSCO) is promoting indigenous and renewable energy as a way of electrifying those areas that do not yet have access to electricity.

Electricity sales, 2007

Source: Philippine Department of Energy



years. Some figures suggest these sources may be contributing as much as 104.1 million barrels of fuel oil equivalent by 2012.

Growth in electricity sales accelerated between the 45 672 GWh of 2006 and the 48 009 GWh of 2007, an increase of some 5 per cent, with some 60 per cent of 2007 sales made by PIOUs.

The DOE, working with the distribution utilities, is predicting peak demand will grow annually at an average of 4.43 per cent up until 2016, by which time it will be