PHILIPPINES COUNTRY PAPER for the Centre of Excellence for Sustainable Energy (CESE)

Introduction: <u>The Philippines. A country with diverse cultural heritage.</u>

Geography

The Philippines is a democratic republic comprising 7,100 islands, located in the Western Pacific Ocean. This is the island group at the northernmost part of the Malay Archipelago. Situated about 1,210 kilometers east of the coast of Vietnam, the country is separated in the north from Taiwan by the Bashi Channel, bounded on the east by the Philippines Sea (and Pacific Ocean), on the south by the Celebes Sea and on the west by the South China Seas. Resulting from this situation are great variations in culture, climate, geography and vegetation.

The country has a total area of 300,000 square kilometers (about 115,830 sq. miles). About 298,170 of the total area are land with water as the remaining fraction. The capital and largest city of the Philippines is Manila.

Extending 1,850 kms. from the north to south and almost 1,127 kms. east to west, the Philippines is of volcanic origin and generally mountainous. Running parallel to the coasts, as well as bordering them in many places, the mountain ranges extend north to south. There are about 20 active volcanoes on the islands, and earthquakes are fairly common.

High mountains with alluvial plains and narrow fertile valleys characterize the larger islands, Luzon and Mindanao. Unlike the larger islands with their relatively diverse topography, the smaller islands are mountainous with surrounding flat lowlands.

Mount Apo, the Philippines' highest peak reaches 9,692 feet (2,954 meters) and is found in the southernmost rangers on Mindanao, the second largest Philippine island.

Considered to be part of the Tropics, the Philippines' mean annual temperature is about 80°F (27°C) with the interior valleys tending to be a little warmer and the mountain peaks a little cooler than the mean. The relative humidity averages about 77%.

The rainy season is from May to November, which is summer monsoon, while the dry season occurs during the winter monsoon from December to April. Typically, the weather is cool from November to February, while it is very hot and dry from March to May. The rainiest times are from June to October, with typhoons not uncommon during this time. The average rainfall in the lowlands is about 80 inches a year (2,030 mm).

People

Latest estimates from the National Statistics Office (NSO) places the Philippines' population at 84.61 million, 10 million of which are located in busy Metro Manila. Population growth rate averages almost at 2.0% per annum. These numbers are spread unevenly with a large portion of the country being uninhabited.

YEAR	GNP	GDP	Population (in millions)	GDP/Capita Income	Forex rate US$/Php
2000 Actual	1,061.10	958.40	76.50	1,252.81	44.19
2001 Actual	1,051.10	989.30	78.02	1,268.01	50.99
2002 Actual	1,105.80	1,034.80	79.57	1,300.49	51.60
2003	1,155.60	1,078.20	81.16	1,328.49	54.00
2004	***1,215.60***	***1,131.10***	***82.77***	***1,366.56***	***55.50***
2005	1,282.50	1,191.00	84.42	1,410.80	54.50
2009	1,628.30	1,488.10	90.49	1,644.49	55.50
20013	2,094.80	1,878.60	96.51	1,946.53	55.50

A person of Spanish descent born in the Philippines, is where the term "Filipino" originated. It was comparable to the "Creole" of the Spanish and French colonies in America. The meaning of the term "Filipino" changed after the 18th century to apply to the Christianized Malays who constitute the bulk of the Philippine population.

Inhabiting the Philippines since the collapse of land bridges to the Asian mainland and Borneo, are a pygmy people, the aboriginal Aetas. Migration of people of Malay and Polynesian descent has come in waves with the present Filipinos, mainly descendants of Malay invaders, divided according to language and religion.

The Visayans are one of the most important groups, numerically, who inhabited the central portion of the archipelago. The other numerically important group is the Tagalogs, living in Central Luzon.

The chief non-Malay groups are comprised of people of Spanish and Chinese descent. Arab missionaries converted tribes of traditional warrior societies, the Moros to Islam in the 15th century. They live mainly in the southern portion of the archipelago.

A small, but economically and politically important minority is a people of mixed Filipino and Spanish or American ancestry, the Mestizos. There is also a number of Chinese who reside in the Philippines and they are also quite involved in business.

Education and Literacy

For children in the Philippines who are between the ages of 7 and 12, education is compulsory and free. Although some families send their children to private school, most children attend public school. The Philippine educational system itself is similar to the American school system, but unlike America which starts school in August or September and goes through May or June, the Philippines starts school in June and ends in March. The universities follow the June-March school year as well, except they follow the system using semesters (June-October, November-March).

In the schools, English is the main language of instruction, although Filipino and local dialects are sometimes used – particularly in the lower grades. The literacy rate of the adult population is about 94%.

Languages

Filipino (formerly Pilipino) is based on Tagalog and is the official language of the Philippines. In spite of being the national language, only about 55% of Filipinos speak the language. In addition to Filipino are about 111 distinct indigenous languages and dialects, of which only abut 10 are important regionally.

English is generally used for educational, government and commercial purposed and is widely understood since it is the medium of instruction in schools. The Philippines are the third largest group of English speaking people in the world, after the United States and the United Kingdom.

A steadily dwindling minority still speaks Spanish, which has at one time been an official language. Some 80% of the population is Roman Catholic, Spain's lasting legacy. About 15% are Moslems and the rest of the population is made up of Christian denominations and Buddhists.

Politics

In February 1987, by national referendum, a new constitution was ratified. The president is elected to a single, six-year term and is the Chief Executive and Head of the Government of the Philippines. Two successive six-year term is the maximum time the vice-president may serve.

The current president, Madame Gloria Macapagal Arroyo has just won a full 6-year term during the last national elections held in May 2004. She replaced ousted President Joseph

Estrada on January 20, 2001. Estrada had been President since June 30, 1998 succeeding Fidel Ramos, President from 1992-1998.

A Chief Justice and 14 Associate Justices make up the highest tribunal in the Philippines, the Supreme Court. The president appoints the justices on the recommendation of the Judicial and Bar Councils.

There are 73 provinces headed by governors in the Philippines. The provinces are also represented by Congressmen, though national elections, who make up the Lower House of Congress called House of Representatives. Twenty four (24) Senators are also elected and comprises the Senate or the Upper House. Within these provinces are sub-divisions comprising 60 chartered cities, over 1,500 municipalities and thousand of other local units.

Economy

Predominantly agricultural, the Philippine economy has grown in the manufacturing sector since the 1960s. During the mid-90s, 46% of the work force was comprised of those in agriculture, fishing and forestry. These areas also contributed over 20% to the GDP. The service industry comprised almost 40% with manufacturing, construction and mining employing 15%.

The main commercial crops during the mid-90s were bananas, pineapples, and copra, with the important subsistence crops being corn, rice, sweet potatoes and cassava. Other commercial crops were papayas, oranges, sugarcane and mangoes.

Following through on its program of economic reforms, the government will try to ensure continued growth and provide an environment for foreign investments. The Philippines tends to spend much more on imports than exports and is trading partners with several countries – with the main countries being the United States, Singapore, Hong Kong Japan and Taiwan. These countries imported items such as petroleum, metals, chemicals, food items, textiles and transportation equipment. The Philippines' main exports were fish, textiles, coconut items and electronic (electrical) items.

Current GDP is US$122 billion while GDP per capita has been pegged at US$1,366.56. Inflation rate has been normalized at 4.4%.

Energy Sector

"We at the Department of Energy, in partnership with our stakeholders, shall improve the quality of life of the Filipino, by formulating and implementing policies and programs to ensure sustainable, stable, secure, sufficient, accessible and reasonably-priced energy.

In pursuit of this MISSION, we commit to render efficient service with utmost integrity and professionalism."

*-- ---- **Mission Statement of the Department of Energy***
Philippine Energy Plan, 2004-2013

Through the years, the eradication of poverty remains a daunting challenge for the government. To achieve the overarching objective of poverty alleviation, the Department of Energy (DOE) has formulated a well-crafted Philippine Energy Plan (PEP) 2004-2013 wherein the government's medium-term plan is anchored on economic growth with social equity, including bridging the urban/rural divide.

This is the energy sector's contribution to poverty alleviation and the DOE shares this vision by believing that provision of electricity is a basic ingredient in national development. Specifically, the DOE's rural electrification program will provide the major impetus for the socio-economic development of rural communities in areas that still lack electricity.

It is a vital component to the national government's program to reduce absolute poverty and spur economic growth. The PEP adheres to President Arroyo's thrust of balanced economic growth, strong market-based industry and poverty alleviation.

To pursue the electrification program's objective of attaining a 100% electrification level by 2006, the DOE will carry on with its policies and strategies as part of the PEP. These include ***the development and utilization of the New and Renewable Energy (NRE) sources for power and electrification and enhancing the private sector participation in all energy activities***.

To meet this daunting challenge of achieving the targets set for rural power sector, the government has been proactive in seeking support from the donors and private sector.

The current energy plan aims to show potential investors that the government is committed to enhancing the use of conventional and indigenous sources of power such as NREs and hydro-electric power and geothermal to reduce the country's dependence on imported fuel. Recognizing however the quantum leap in financing requirements of approximately Php500 billion to set off programs in the oil, gas, hydro, geothermal and coal sectors, coupled with fiscal and institutional constraints, the government cannot do it alone. It needs the assistance of the private sector to undertake these projects.

General Overview of the Energy Sector

The Philippine Energy Sector is governed by the Medium Term Economic Development Plan of the country covering three major priority areas:

1) sustained economic growth;
2) social equity and poverty reduction; and
3) market-based industry. In line with these, the following goals were identified for the energy sector:
   - supply security and reliability
   - energy affordability and accessibility
   - environmental quality
   - consumer protection

The Philippine total energy requirements are foreseen to grow at an annual rate of 6%. New and renewable energy sources, mostly traditional fuels such as fuel wood, agriwastes, bagasse and charcoal, already account for a major share of the indigenous energy.

Current Electricity Situation

Demand for electricity is expected to grow with new installed electric capacity. About half of these capacity additions are already on-going and committed projects of NPC and MERALCO while the other half uncommitted capacities are expected to be filled in by Independent Power Producers (IPPs) in the deregulated market environment. While the combined capacity from existing and committed plants is more than enough to sustain the growth in power demand up to the year 2007, the capacity gap during the period 2007-2010 represents the uncommitted capacity that will be put up by the private sector under the restructured power market. Major developments are expected in the electric industry with the recent signing of the implementing rules and regulation for Republic Act (RA) 9136 also known as the "Electric Power Industry Reform Act of 2001 (EPIRA)." With the "Accelerated Barangay Electrification Program" (rural electrification) of the government in place, the less complicated site selection of cogeneration facilities for power generation projects may have a greater advantage compared to large-scale transmission dependent utility scale projects.

Under the 2004 to 2013 PEP the combined or non-coincident peak demand of the Philippines is expected to increase from 9,134 MW in 2004 to 12,204 MW in 2008 and 17,241 MW in 2013 translating to an average annual growth rate of 7.3 percent during the next ten years.

Based on the projected peak demand, an optimal capacity expansion plan was determined. Using the key assumptions applied to NEDA's low GDP projections, a total of 7,015 MW is needed to be commissioned within the planning period. Of these, 765 MW is currently considered as committed projects (i.e. those that are under construction; have been contracted to private entities for development; or have closed financing negotiations). This is broken down into 415 MW in Luzon, 150 MW in the Visayas and 200 MW in Mindanao.

The resulting electricity demand projections anticipate power supply shortages by 2008 in both Luzon and Visayas grids and 2005 for the Mindanao Grid if no adequate capacity addition is put in place.

Projected electricity generation by type of fuel

The country's power generation mix will grow by an average annual rate of 7.6 percent during the next ten years to support the expected electricity demand growth pegged at 7.3 percent. From 57.2 TWH in 2004, gross generation is expected to reach 79.1 TWH in 2008 and 111.2 TWH in 2013. The power generation mix will experience a constant growth pattern between 2004 and 2008 with the commercial operation of the 765 MW committed capacity.

Legislation and Programs Promoting Energy Efficiency, Biomass and Renewable Energy (RE)

The current administration is committed to pursue the continuous development and use of New and Renewable sources of energy as one of the major strategies to attain self-sufficiency along with environmental protection.

The country's NRE program aims to support the major thrust of the energy sector of attaining total electrification of remote Barangays in the country by 2004. Accordingly, the following strategies have been identified to attain said policy:

1. Intensify application of NRE systems in grid and off-grid areas
2. Institutionalise area-based energy planning and management to support rural electrification
3. Encourage favorable market environment for manufacturers in the NRE sector
4. Promote the interconnection of NRE facilities in island grids
5. Intensify the promotion of NRE systems
6. Continue adaptive research and development for more advanced technologies
7. Encourage the use of alternative liquid fuels for all government vehicles

New and Renewable Energy
A. Challenges and Gaps

• Creation of investor-oriented environment

- A credible environment which addresses legal and regulatory issues, reforms and incentives shall attract investments

- Provision of sectoral reforms and rational incentives to build a friendly environment for NRE development

• Maximise NRE as an alternative resource

- NRE in the Philippines remains to be an underutilised resource with tremendous potential

• Technology transfer

- Any promotion of NRE would need adequate information and training programs

B. Programs and Projects

• Promote large-scale commercialisation of NRE
- Encourage the development and commercialisation of NRE technologies
- Optimise the use of NRE as an alternative energy resource

• Improve regulatory and investment environment
- Pursue the passage of NRE law that provides regulatory framework and relevant incentive schemes to NRE developers/investors.

The Secretary of Energy has issued the following policies being seriously considered to promote renewable energy development:

- Priority dispatch of small renewable energy under the Wholesale Electricity Spot Market (WESM) Rules
- Allocate a minimum amount of generation capacity from renewable energy
- Promotion of Green Renewable IPPs (GRIPPs)
- Introduce Green Pricing Program mechanism to promote consumer choice of power supply

The Department of Energy has announced the ASEAN Energy Awards 2003 for New and Renewable Energy Projects.

Energy Efficiency (Philippine Energy Plan 2003 – 2012, DOE Presentation)

A. Challenges and Gaps

❑ Market transformation

- There is a need for a market transformation, with the DOE's overall energy efficiency programs serving as catalyst, where market players and consumers place a higher premium on energy efficiency strategies, technologies, products and services.

❑ Consumer awareness and protection

- There is a need to uplift consumer awareness on the patented pecuniary and environmental gains through energy efficiency and protect them from rising cost of energy.

B. Programs and Projects

❑ Creation of a market that is more responsive and receptive to energy efficiency needs and technology trends

- Integrate energy efficiency into market in the form of strategies, approaches and viable measures that will result in actual savings

- Empowerment of consumers to better access tools to sustainable growth via energy Efficiency

- Conduct education and information dissemination activities on energy efficiency strategies, technologies, products and services
- Strengthen consumer protection by ensuring that energy products and services in the market comply with energy efficiency standards.

Legislation and Programs Promoting Natural Gas
Downstream Natural Gas

The DOE recently issued Interim Rules and Regulations Governing the Transmission, Distribution and Supply of Natural Gas to address gaps in existing laws and provide basic framework to guide initial investments and business operations in the downstream gas industry. The rules are designed to mitigate investment risk during the industry's development stage while laying the foundation for a competitive market in the future. As such, the rules will be reviewed periodically. The DOE is working closely with Congress on the passage of a proposed legislative measure to establish a more comprehensive and stable legal and institutional framework to govern the regulation of the natural gas industry.

The Department of Energy is working out additional package of incentives to be offered in line with amendments to PD 87 or the Oil and Gas Law, which include:

- cross cost recovery of exploration and development expenditures, and
- enhanced cost recovery and flexibility in reducing share for marginal fields and high-cost frontier areas.

Natural Gas Policy

- Promote natural gas as a secure, stable and economically efficient source of energy
- Promote competition by liberalising entry and adopting competition and fair trade measures with due regard to public welfare and the financial viability of industry participants
- Promote natural gas as an environmentally friendly source of energy
- Ensure compliance with international safety standards and Philippine environmental laws, rules and regulations

Natural Gas Objectives

- Increased share of natural gas in the energy and power mix while maintaining a diversified fuel mix
- Increased utilisation of natural gas as fuel in the power and non-power sectors
- Competitive natural gas prices vis-à-vis other fuels in a regulated market which transforms into a deregulated market characterised by gas-to-gas competition and market based transactions
- Adoption of state of the art technology, development of experts in energy matters, increased employment and manpower development in localities where the development of indigenous natural gas is undertaken
- Increased economic benefits to consumers

Recent development in policy and regulatory framework on natural gas

- DOE Charter
- E.O. No. 66
- DOE Gas Circular – Interim Rules and Regulations
- Philippine Energy Plan 2003-2012

Legislation and Programs Promoting Coal

The Philippine Energy Plan envisions developing a stable and secure energy supply mix by means of the following strategies:

- Increase energy self-sufficiency level
- Intensify the development, exploration and use of indigenous energy
- Diversify energy sources/fuels

These strategies point to a positive support for indigenous coal and gas resources.

Coal

A. Challenges and Gaps

• Availability/Development of ready market

- Coal end-users opt for imported coal because local coal does not consistently match quality and specification requirements

• Improvement in mining technology

- The low production output of coal producers is due to difficult mining conditions which have contributed to unstable supply

• Socio-Political Issues

- The peace and order problem in some areas has forced contractors to cease operations and delay coal exploration activities

- The misimpression of some local residents about coal mining's effect on the environment delays the issuance of pertinent documents necessary for the commencement of operations

B. Programs and Projects

• Encourage investments in mine-mouth coal power plants

- A study will be undertaken to determine the feasibility in putting up a mine-mouth coal-fired power plants using clean coal technology in particular locations where the coal reserves warrant.

• Determine and promote alternative uses of indigenous coal

- Alternative uses for local coal shall be pursued such as coal briquettes, horticulture and industrial paints.

• Intensification of small-scale coal mining program

- Enhance the delineation of potential small-scale coal mining areas that could be offered to rural communities to generate more employment opportunities.

• Development of market for local coal
- Conduct pre-feasibility studies on establishment of mine-mouth power plants using clean coal technology

• Improvement in mining technology
- Determine applicability of appropriate mining methods to increase mine productivity

Clean Development Mechanism

The Philippine Senate has approved on third reading on October 24, 2003 a resolution concurring in the ratification of the Kyoto Protocol to the United Nations Framework Convention on Climate Change. With such concurrence, the Philippines can now participate in the Clean Development Mechanism (CDM) in the reduction of gas emission to five percent of 1990 levels during the period of 2008 to 2012. Secretary Vincent Perez announced this important event during his presentation at the Sustainable Energy, Energy Efficiency and Environmental Solutions Expos 2003.

The Government's 10-point Agenda for the Reduction of Electricity Rates

- Reflect the true cost of service in the rates
  - Billing statements should be transparent
  - Tariffs should be unbundled

- Introduce price incentives to stimulate demand
  - Introduce "Declining Block" rate structure
  - For large end-users, price per kwh declines as consumption increases
  - NPC to implement in partnership with Distribution utilities to jointly serve end-users

- Optimise the utilisation of generation capacity to minimise cost
  - Optimise utilisation Mix of NPC Power Plants
  - Utilisation mix to seek least blended costs
  - Independent systems review of Luzon Grid by the Operations Research Society of the Philippines
  - Redeploy power barges and relocate land-based generation plants from Luzon
  - Maintain sensible reserve capacity and alleviate transmission constraints

- Establish competitive wholesale generation market
  - Accelerate operation of WESM
    - ✓ Transparent economical dispatch of generating facilities
    - ✓ Horizontal unbundling of NPC generation assets into individual GENCOs to decentralise dispatch and pricing discretion
    - ✓ Immediately appoint an independent "IPP Administrator" for each IPP GENCO plant
    - ✓ Expedite procurement of required WESM software and hardware
    - ✓ Target interim WESM launch before end-2002

- Accelerate open access to give end-users the power of choice
  - Accelerate implementation of open access
    - ✓ End-users with at least 1 MW average monthly consumption may choose their electricity source
    - ✓ Target introduction by December 2003
    - ✓ Preserve direct power connection
    - ✓ Preconditions – unbundle distribution rates
    - ✓ operate interim WESM
    - ✓ remove cross-subsidies

- Require efficient performance of distribution utilities
  - Encourage shift from "cost plus" mentality to a "cost efficient" regime
  - Encourage transparent and competitive procurement
  - Accelerate transition from RORB to a performance-based methodology by December 2003
  - Undertake comparative efficiency ratings of Distribution Utilities
  - Promote competitive bidding for long-term power supply contracts
  - Ensure compliance with Distribution Code

- Strengthen the electric cooperatives
  - Promote the consolidation of smaller sub-performing Electric Cooperatives (e.g. Bicol Region)
  - Adopt the Big Brother-Small Brother Arrangement among Electric Cooperatives (e.g. Lanao)
  - Encourage Investment Management Contract (MCs) for suitable Electric cooperatives by private operators and well-run electric cooperatives (e.g. Aklan)

- Seek to reduce IPP Contract costs
  - Review IPP contracts and seek to reduce contract costs
    - ✓ Use appropriate benchmarks based on legal, financial, operating and technical standards
    - ✓ Seek to reduce stranded contract costs through –realignment of fixed and variable costs; reduction of minimum energy off-take and non-renewal of soon to expire contracts

- Explore financial engineering to reduce stranded costs
  - Refinancing of stranded costs over longer periods
  - Prepaid stored fuel/energy bankable for a certain period pending future use
  - "Regulatory asset" treatment of excess purchased fuel/energy to be included into the rate base

- Enhance ERC's capability to promote consumer welfare
  - Promote greater market competition through transparency of rules and strict enforcement of law on anti-competition policies
  - Penalise abuse of market power
  - Set rules to protect end-users from undue electricity charges
  - Protect consumers from excessive PPA charges from privately-negotiated bilateral contracts