

## **Policy Directions of Renewable Energy (RE) in the Philippines: The Making of a Capable State**

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### *Abstract*

*Renewable energy is a vitally important policy, and the earliest demand for reforms in the energy sector was given expression by the dynamic civil society in this country. Civil society's concrete experience of democratic self-administration has ensured a program with a fundamental legal and regulatory framework grounded in a set of institutional reforms. In deciding upon what is to be done, every effort was made to promote an energy reform agenda by securing coordinated cooperation. A related advantage of drawing stakeholders into the advocacy process is that it can develop local enthusiasm for getting the law implemented more rapidly. A capable state has provided society with responsible officials knowledgeable in public preferences and priorities. Further, the evolutionary endpoint of the policies on renewable energy is a collective economic order defined by a plurality of citizen and state engagements.*

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## **Introduction**

Human development can be sustained by purposeful action. The challenge is to change the patterns of consumption and production, using new technologies to achieve greater efficiency and to reduce waste and pollution. Many such technologies are already in production or on the drawing board. On renewable energy, the Philippines has established the legal and regulatory framework that ensures stability and equity in the marketplace. In June 2008, Republic Act No. 9513, otherwise known as the Renewable Energy Act of 2008, was passed after 17 years of intense lobbying by civil society. The measure aims to develop biomass, solar, wind, hydro, ocean and geothermal energy; to connect these alternative energy sources into the national power grid; and to balance the goals of economic growth with the protection of the environment.

Energy is the lifeblood of a modern economy and is central to sustainable development. As of March 2010, a total of 205 renewable energy (RE) contracts have already been awarded. Thirty-three of the contracts have been concretized, another nine are in the development stage, and 163 are in the pre-developmental stage (Almendras, 2010, p. 5). In 2009, there were US\$2 billion dollars worth of investments on RE.

The energy reform agenda prioritizes energy security, promotes socio-economic development in rural areas, and adopts clean energy to mitigate climate change in ways that will enhance local productivity and countryside development. It is envisioned that by the first quarter of 2012, a renewable energy market and RE registrar would be in place (Marasigan, 2010, p.6). Specifically, the regulatory framework ensures consolidated regulations, non-fiscal mechanisms providing priority use, and the creation of the Renewable Energy Management Bureau and the National Renewable Energy Board. By the end of 2011, the national RE energy plan should further enhance synergies in the actions of the business sector, the State and society.

Economic policies require partnerships that can make a critical difference in the implementation of such policies, even in the most difficult circumstances. The Philippine experience on RE has demonstrated that the reform process requires close linkages between the people and intermediary institutions that can advocate policy changes at the local and national level-given the increasing complexity of public management, and the imperatives of a just and equitable society. The country is facing a growing scarcity of renewable resources essential to sustaining the ecosystem and to human survival. With a robust civil society, advocacies from below on environmental

damage would have profound consequences in the legislative process as well as the overall governability of the socio-economic order.

In January 2011, the biggest conference on RE was held and facilitated by a member of civil society, the RE coalition, which has been at the forefront of the push toward a consensus on the nature, role and functions of official institutions in the energy sector. Much progress has been made in improving the performance of the Philippine power sector since 1990, when 47% of the output was derived mostly from imported oil and petroleum products (ADB, 2008, p. 264). Currently, there is an increasing diversity in the power generation fuel mix, with both fossil and renewable sources. Given the aggressive development of the country's renewable energy potential, we may see a fundamental transformation in the process of sustainable growth and responsive governance in the future.

This paper aims to illustrate the quality and diversity in appreciating RE policy framework in the context of changing institutional, technological and financial environments, particularly in the creation of a State capable of improved efficiency in energy use.

### **The Scale and Diversity of Renewable Energy**

The Philippines has gained a new record—that of having the most expensive electricity in Asia (Manila Bulletin, 2011). A study has shown that, with an average retail rate of electricity of 18.1 US cents per kilowatt hour, the Philippines has eased out Japan as the Asian country with the most expensive electricity. The high cost of electricity in the Philippines was due to the fact that all costs—from producing power to distribution and taxes—are passed on to consumers. The Philippines is the only country in the region that has privatized its electric power sector and has no state subsidy on rates.

Deprivation in energy services hits the poor in three major ways: through indoor smoke pollution, which is a major cause of lung disease among women and children; through lack of energy for income-generating activities; and through lost time spent collecting wood for fuel. Moreover, rapid economic growth and rapid urbanization have resulted in rising resource use and pollution. Environmental damage is a major cause of poverty and deepening inequality. There is thus an urgent need to combine energy efficiency with environmental protection. Access to clean and modern energy services for all is essential not only for household uses, but also in opening opportunities in communications, transport and production.

Historically, the country has lacked abundant fossil energy, making it a net energy importer, but indigenous production is gradually growing from widespread renewable and newly exploited natural gas and coal resources. Proven gas reserves are at 3.48 trillion cubic feet (ADB, 2008, P. 261). By 2010, the country has been considered an estimated 60 percent self-sufficient in energy because of the build-up in the RE industry and in the new industry of biofuels (Newnet, 2008, p.1).

Biofuels are produced from agricultural crops, and increased consumption of biofuels create new markets for farm products, create new jobs in rural communities and keeps money circulating throughout the domestic economy. Because these fuels are grown and produced from plants, they are also called renewable fuels (Dia, 2010, p.1).

In 2006, Republic Act No. 9637, known as the Biofuels Act of 2006, was promulgated. It was the declared policy of the State to:

- develop and utilize indigenous renewable and sustainably sourced clean energy sources to reduce dependence on imported oil;
- mitigate toxic and greenhouse gas emissions;
- increase rural employment and income; and
- ensure the availability of alternative and renewable clean energy without any detriment to the natural ecosystem, biodiversity and food reserves of the country.

The Biofuels Act mandated the blending of 1% coco-methyl (CME) with diesel to increase to 2% after two years from the signing of the law, and a blend of 5% bio-ethanol with gasoline to increase to 10% after four years, that is, by February 2011. Coco-methyl ester (CME) is derived from coconut oil (CNO), the feedstock currently used in the Philippines for bio-diesel production. The feedstock for bio-ethanol is mostly sugar. The National Biofuels Board has announced an extension of six months for the petroleum-based suppliers to comply with the law and to encourage investments in the sector. There are 12 bio-diesel plants in the pipeline capable of producing 395 million liters a year while the mandated supply is 400 million liters. Meanwhile, the San Carlos Bio-Energy and Ethanol Plant has just started operations and is capable of producing 30 million liters a year (Dia, 2010, p. 12). In 2008, generated savings reached Php2 Billion pesos with the reduction in imported oil worth 78 million liters.

The country's primary demand energy is projected to double from 43.6 million tons of oil equivalent (MTOE) in 2005 to 79.6MTOE in 2030, growing at an average of rate of 2.4% per year (ADB, 2008, p. 260). The

key growth drivers will be the service and transport sectors. The transport sector is noted to be the crucial feature of the energy demand structure, as it is predicted to account for 44% of the economy's energy demand. Some US\$20 billion worth of investments are required to achieve the targeted RE capacity of 80% of the country's energy requirements by 2030.

Renewable energies come from natural resources. All are seemingly non-polluting. Currently, 26% of the country's power supply is generated from burning imported coal, while 23% is generated from burning oil. It is estimated that an increase in RE share in power generation mix can reduce oil imports by half, and the resulting savings can be used for social and infrastructure programs. The oil imports amount to \$7.5 billion or some 100 million barrels a year.

The Philippines is the second largest geothermal producer in the world, with a potential additional capacity of 1200 megawatts (MW) (Perez, 2010, p.1). Geothermal energy has always been a bright point for the country. The Philippines coastline is longer than the US. Geothermal energy has resulted in some foreign exchange savings worth US\$1.8 billion.

In terms of wind resource, our country's potential is at 7,404MW which is the largest in Southeast Asia (Perez, 2010, p.1). A 33MW wind farm has been built in Ilocos Norte, the first in Southeast Asia. Wind regions have been identified in Batanes, Babuyan Island and between Mindoro and Panay, among others. RE growth momentum on wind energy has resulted in six additional contracts in Ilocos Norte and Negros Occidental.

The country also has the largest solar manufacturing hub. In 2004, the SunPower Philippines Manufacturing Limited established a Solar-Cell Factory, again the first semiconductor fabricator and the first large scale solar cell facility in Southeast Asia. From an initial 25MW per year of high efficiency silicon solar cells, the future capacity expansion is set at more than 100MW. Currently, around 200 people are employed. The amount of solar energy that Philippines receives in one day can run the economy for 20 years. Students from the De La Salle University developed a solar car and joined a 3,000km race in the world solar challenge in Australia in 2008 (Perez, 2010, p.24). They finished 11th from among 40 solar car entries around the world.

Furthermore, the Philippine National Oil Company has introduced solar home systems to rural households consisting of a solar panel, battery, wiring, lights and other fixtures, including maintenance visits within the first year of installation. The solar panels have a life span of 20 years and can generate enough electricity to run small electrical appliances such as electric fans, radio and television sets as well as household lights.

The potential of hydroelectric resources is pegged at 10,500MW, and utilization is at 3,342MW. A potential capacity of 1,784MW has been identified from 888 sites. The plan is to double hydroelectric power capacity by 2013.

Biomass has a resource potential of 235 million barrels of fuel oil equivalent (MMBFOE). Much of the hundreds of rice mills around the country do not practice cogeneration. The country lags behind its ASEAN neighbours when it comes to instituting cogeneration plants and practices. However, the La Suerte Rice Mill Power Plant, a one MW cogeneration plant, is now operational. Much of the installed cogeneration plants are in industries wherein such systems are inherent such as sugar, pulp and paper, chemical and coconut oil. To date, there are 7 biomass projects that have been accredited with the Board of Investments.

The aggressive policy of the State to facilitate the energy sector's transition to a sustainable system with RE as an increasingly prominent viable and competitive option is visibly proactive. Moreover, current initiatives in the pursuit of this policy are directed towards creating a market-based environment that is conducive to private sector investment and participation, and encourages technology transfer and research and development. Based on current projections, RE is estimated to grow at an average annual rate of 2.4% in absolute terms. Biomass, micro-hydro, solar and wind energy will remain the largest contributors to the total share of renewable energy in the energy mix, with an average share of 27.5%. Meanwhile hydro and geothermal energy will contribute the balance and continue to be a significant source of electric power.

A scenario has also been drawn up which sets a higher target for RE's contribution to the country's installed generating capacity, based on the enhancement of existing programs and strategies, realization of higher production targets, establishment of market based industry, and availability of new international financing schemes such as the clean development mechanism (CDM).

### **RE Law: The Most Comprehensive in Asia**

With regard to production incentives, the Renewable Energy Act, considered to be the most comprehensive RE law in Asia as shown in Table 1, provides a seven-year income tax holiday and tax exemptions for the carbon credits generated from renewable energy sources (Perez, 2010, p. 19). A ten-percent corporate income tax, as against the regular 30 percent,

is also provided once the income tax holiday expires. Renewable energy facilities will also be given a 1.5% realty tax cap on the original cost of equipment and facilities to produce renewable energy. The law also prioritizes the purchase, grid connection and transmission of electricity generated by companies from renewable energy sources, and the power generated will be exempted from value-added tax. Rules for duty-free importation of RE machinery equipment and materials within the first 10 years and tax credit on domestic capital equipment and services are also in place.

Table 1. List of RE Incentives by Country in Asia

Country	Feed in Tariff	RPS	Capital Subsidies Grants	Investment Excise	Sales Tax Energy Tax
Cambodia			x		
China	x		x	x	x
India	*	*	x	x	x
Indonesia	x		x		
Japan	*	x	x		
Korea	x		x	x	x
Philippines	x	x	x	x	x
Thailand	x		x		

Country	Tradable Renewable Energy Certificates	Energy Prod. Payment of Tax Credits	Net Metering	Public Investments of Financing	Public Competitive Bidding
Cambodia					
China				x	x
India		x		x	x
Indonesia					
Japan	x		x	x	
Korea	x			x	
Philippines	x		x	x	x
Thailand			x	x	

Source: 2007 Global Status Report for Renewable Energy Promotion Policies of Asian Countries. Entries with asterisk (\*) mean that some states/provinces within these countries have their respective policies.

In terms of market development, the RE Act provides for on-grid/off-grid development mechanisms, such as the Renewable Portfolio Standard (RPS) consisting of a minimum percentage of generation to be sourced from eligible RE resources—contributing to the growth of the RE industry and Feed in Tariff (FIT), which is guaranteed fixed price for at least 12 years for electricity produced from emerging RE resources. As a result, a renewable energy market and the WESM submarket where RE certificates will be traded can be developed.

Technologies for decentralized renewable energy sources, such as wind and solar power and modern biomass technologies, have enormous potential. In addition to access to modern energy, employment can be created and opportunities for rural entrepreneurship can be scaled up. The law encourages the advancement and wider use of technology through incentives for commercialization; tax and duty-free importation of components, parts and materials; tax credit on domestic capital components, parts and materials; income tax holiday for seven years; zero-rated VAT for all RE equipment transactions; and tax rebates for purchase of RE components. As for the consumers, there is a zero-percent VAT on the sale of fuel generated from RE; a green energy option to allow end-users the option to use RE as their source of energy; and net metering for RE to allow end-users generating their own power to sell it to the grid.

In general, the State appears to be getting its act together. It has been observed that the push for energy efficiency and security has made more progress in recent years than in the previous 17 years that had seen clean energy reforms get bogged down. So far, the results are impressive. But perhaps the most important result is the new dynamic environment with international firms seeking the RE market.

The Solutions Using Renewable Energy (SURE) installed a state-of-the-art biomass plant for Pepsi Cola Products inside its bottling complex in Rosario, La Union. It is a 1.2MW rice-husk and woodchip-fired power plant built at a cost of \$2.7 million. The cogeneration plant will produce steam and electricity, which will be used in cleaning soft drink bottles, while the energy generated from the use of the biomass will be equivalent to 2.7 million liters of fossil fuel per year.

PhiBIO is presently developing technologies that can recover methane from sewage sludge and food waste to reduce environmental damage, including carbon emissions caused by the improper treatment of garbage. In an ongoing project for Manila Water at the South Makati Sewage Treatment Works, PhiBIO utilizes microbial matter to reduce sewage sludge and create high-quality biogas. The methane expected to be recovered is more than



sufficient to supply the electric requirements of the sewage treatment plant. The project will be the first sewage sludge system in Asia to gain official recognition as a clean development mechanism project upon approval by the Environmental Management Bureau. The management of PhiBIO has long stated that the garbage problem in the country is not a solid waste problem but a liquid waste problem. However, if controlled immediately, liquid waste can be treated aggressively through the use of ubiquitous microbes in the food waste, which can be harnessed to reduce the impact of food waste and recover the methane to operate electric power plants and convert residual organic solids into high value-added compost.

The North Wind Power Development Corporation was organized to develop wind power as a renewable, environment-friendly and economically feasible source of energy in the Philippines. Located in the northern most part of Luzon Island in the town of Bangui, Ilocos Norte, the project sells electricity to the Ilocos Norte Electric Cooperative (INEC) and provides 40% of the power requirements of the province of Ilocos Norte. Some 20 wind turbines have been built along the shoreline of Bangui Bay, with a total capacity of 33MW.

The Department of Energy has teamed up with the Department of Interior and Local Government and the Department of Public Works for an efficient lighting market transformation to cover buildings and roadways. Some 13 million compact fluorescent lamps (CFLs) will be distributed, and a plant for recovering mercury from fluorescent lamps will be established (Ayson, 2009, p. 4). Demand-savings from the 13 million CFLs correspond to an annual CO<sub>2</sub> reduction of 350,000 tons, while savings in oil imports amount to US\$120 million. The idea is to jumpstart a large-scale sustainable market for high-quality efficient lamps. The project is said to cost US\$46.5 million and implementation is set for two years.

Studies have also shown that the marine environment can provide energy in the form of heat, currents, and wave and tidal power. Initial ocean energy sites have been identified and projects are to start in 2015. While the capital cost is high for the first generation of 10MW, the platform is highly scalable (Energy Island Bell, 2010). By 2020, commercialization of ocean energy project options is targeted.

### **Governance for Inclusive Growth**

There is an expectation that by 2015, when power supply has been stabilized with the completion of new power plants, most of the country's

energy requirements will come from RE sources. To ensure the sustainability of the reform process, the State continues to build a national consensus to highlight the complexities of realizing sustainable development in view on energy security, efficiency and protecting the environment for future generations. The Aquino regime promised a social contract with the Filipino people on an inclusive growth characterized by a high economic growth; productive opportunities across geographic areas and income and social spectrums; and effective social safety nets to those who will be left behind in the rapid growth.

The RE Coalition was at the forefront of a multi-sectoral effort that advocated for the passage of the Renewable Energy Law in December 2008. It developed the RE Toolkit, which served as a guide for legislators. The aim is for the Philippines to achieve energy self-sufficiency and environmental sustainability. The members of the RE Coalition closely collaborated with the legislators in the House of Representatives and the Senate. Members of the coalition include:

- Archdiocese of Manila-Ministry of Ecology
- Catholic Bishops Conference of the Philippines-Episcopal Commission on Youth
- Habitat for Humanity Philippines
- Greenpeace
- Philippine Society of Youth Science Clubs
- Sustainable Development Solutions for Asia and the Pacific
- Young Women's Christian Association of the Philippines
- National Geothermal Association of the Philippines
- Philippine Sugar Millers Association
- Renewable Energy Association of the Philippines
- Private Sector
- Chevron Geothermal Philippines Holdings
- Energy Development Corporation
- Philippine Bio Sciences Company
- Honorary Member
- Department of Energy (an honorary member)

In 2011, through the efforts of the RE Coalition, the Center for Clean and Renewable Energy Development (C-CRED) was organized to continue to uphold the shared interests of renewable energy sector in advancing RE development goals, strengthen the network of energy stakeholders, to provide them with a strong voice for advocacy, and to provide a knowledge

center that is focused on research. The C-RED holds regular roundtable discussion series on the country's sustainable energy activities, with the active participation of the Department of Energy. The efforts of the RE Coalition has ensured that, in partnership with the State, the advocacy for clean and sustainable energy, as well as the continuing education of consumers and the youth, will be sustained.

The 2011 Renewable Energy Plan has been completed and civil society is actively engaged. Democracy is the key to good governance and contributes to state capacities as stimulating economic growth and safeguarding the environment. Democratization processes attempt to legitimize the concerns of citizens and promote equality. Accountability can best be achieved through transparent procedures such as decentralization of information and establishing citizen watchdog.

The National Renewable Energy Board has convened with members representing the broad spectrum of society including the NGOs. Among others, its function is to implement the RE trust fund to finance research, development and promotion of RE sources to power and non-power applications.

A citizen roadmap has been introduced in the budget process, called the Alternative Budget Initiative (ABI). It is headed by no less than the former national treasurer. The ABI has submitted its own budget proposal to Congress. The budget watchdog has great potential to make a lasting positive impact on the state of democracy and governance in the country. Various environmental groups and networks have carefully studied the entire budget process, and have been attending sessions in the legislature to develop awareness and support from key legislators.

### **An Overview of LGU and NGO Relations**

In June 2011, the first Mindanao Local Actions in Response to Climate Change and Sanitation Options and Clean Energy Initiatives on greenhouse gas emissions inventory and accounting was held in Davao City, with nearly a hundred participants in attendance. In November 2011, the Freedom from Debt Coalition (FDC) questioned the reallocation of the US\$101 million loan by the Department of Energy from the Clean Energy Fund to the electric tricycle project instead of major solar-power generation projects without any consultation with civil society and industry members (De Vera, 2011, 1). The lack of transparency is a major problem in government-NGO relations in the country.

On 12 January 2012, the National Biofuels One Stop shop was launched. The aim was to connect LGUs, NGOs and other stakeholders in ensuring the implementation of the National Biofuels Program. The Philippine Agricultural Development and Commercial Corporation (PADCC) is tasked with managing the biofuels feedstock program. Also on the same day, the First Philippine International Bioenergy Conference was convened, with the active participation of the Department of the Interior and Local Government, among others (GMA News November 2011, 1). The meeting seeks to identify the opportunities and challenges for major feedstocks and sources of biofuel and biomass production.

The PADCC serves as the coordinator for the convergence of land holdings under the Department of Agriculture, the Department of Agrarian Reform and the Department of Environment and Natural Resources. The key strategy is the development of 2 million hectares new land for agribusiness, which is expected to generate 2 million new jobs and improve the productivity and incomes of those in the rural areas. This approach is referred to as the Agribusiness Lands Investment Center (ABLIC), which is responsible in providing information assistance on new lands inventory, on renewable energy that is focused on biofuels and biomass. The policy to facilitate the energy sector's transition to a sustainable system through mobilization of the citizens and the LGUs by capacity building in sustaining long-term efforts in clean energy is being closely monitored by NGOs such as the Haribon Foundation, *Bantay Kalikasan* and the Environmental Broadcast Center.

### **Renewable Energy and the Workplace**

The new norm is unemployment and the expansion of the informal sector. The implementation of RE technologies and projects should assist Philippine industries in generating decent, working-class jobs; increase the country's energy independence; and help mitigate climate change. Most importantly, people can have a quality of life conducive to their overall well-being. Employers must develop a new perspective and higher-order thinking with regard to innovation in the world of work and the environment.

## Conclusion

Society's centralized institutions, whose very existence rely upon outdated hierarchies, have to be improved and redesigned. The important part is the process of creating linkages between people and clusters of people. People have to talk to one another, share ideas, information and resources. The energy reforms in the Philippines are an example of how horizontal links, networks and coalitions can provide a genuine cross-disciplinary approach to issues. An effective State emerged because people organized themselves to change society.

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