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Analysis of the Constraints in the Renewable Energy Sector within a Multi-level Energy Transition Perspective (MLP): The Case of the Philippines

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Abstract. As an emerging economy, there are stumbling blocks for the Philippines that it needs to overcome to actualize its growth potentials. One major challenge is providing energy to its growing economy and population without sacrificing energy security and sustainability. This paper explores the country's energy system within a multi-level decision-making energy approach (MLP) to better understand the context and nature of barriers in the renewable energy (RE) sector. Analysis show that: first, past crisis continue to have lingering effects, brought positive and negative consequences, in the electricity sector; second the energy security goal is only focused on increasing capacity generation but in reality has only led to increased share of conventional energy such as coal; and lastly, the unbundling of the electricity sector under the EPIRA Law has paved the way for oligopoly/monopoly to thrive, it has created a fragmented energy structure, and has allowed greater costs for the consumers. All of these have pose greater barriers for RE to thrive and, ultimately, is hindering the country from achieving a sustainable energy transition.

1. Introduction

The Philippines is an archipelago with more than 7,000 islands and is situated in the West Pacific coast. It is categorized as a lower middle income country by the World Bank [1] although economic projection is bright for this country with its young, dynamic population; teeming natural resources; and strong macroeconomic fundamentals. Yet these potentials can be reversed if persistent internal problems won't be addressed. One of the major challenges identified by scholars and policymakers that might push back the country's growth and development is in the energy sector. This is the topic the author wishes to explore in this paper.

As the economy and population expands along with it rises the demand for energy. Electricity, as the primary energy source for the households, is projected to expand at an annual average rate of 5.1 percent, from 5.9 MTOE in 2011 to 15.3 MTOE in 2030 [2]. A major portion of this supply comes mainly from conventional energy sources (e.g., coal, oil and natural gas), which is already more than 70 percent in 2014 alone. What is problematic is that mostly of these sources are imported, and historically this did not do good for the country. In turn, the majority of the poor populace is paying an expensive electricity rate, which is among the highest in Asia.

Like the Philippines, the threats brought about by overdependence on conventional energies have paved for countries to develop their own indigenous energy resources and to adopt renewable energy (RE) technologies. This is furthered by the increased commitment of countries towards climate change,



having its effects becoming more felt today. As a result, we see global energy policy shifting more and more towards cleaner and sustainable energy options.

This changing energy landscape presents opportunities for the Philippines that have vast potentials for RE resources. This is a good opportunity for the country to take advantage from given that RE technologies continues to be cost-effective with its decreasing costs; better technological capacity; and a wider recognition of the multiple benefits it can bring.

But even with such favourable prospect of renewables, developing the country's RE sector has remained a challenge until today. This happens when conditions do not allow for RE to be at a level playing field with conventional energies. Since RE is still a relatively novel technology for emerging economies such as the Philippines, there are reservations that RE cannot provide a sufficient and stable energy supply for its huge demand for energy alongside its growing economy and population. That is why it remains a balancing act between energy security and sustainability the energy policy of the Philippines.

2. Data and analytical framework

To provide additional discussions and aid the policy-making for the successful transition of the Philippines to a cleaner and sustainable energy system, the central theme of the paper is about the constraints the RE sector is facing in the Philippines. It is because the energy transition plans towards cleaner and sustainable energy system has always been challenged and impeded by these factors.

For this paper, semi-structured interviews and surveys were conducted among renewable energy investors/developers to identify the "major" constraints as derived through their own personal experience in investing and financing RE projects in the Philippine. About 20 companies/organization participated in the interviews/survey. All the company/organization representatives hold managerial positions, either the owner and/or the RE project manager. The fieldwork was done in September to November 2016 in Metro Manila, Philippines, where most of the companies' offices are located. The findings were then further verified through extensive literature reviews.

The top 3 constraints as identified by the majority of these respondents are: 1) the difficulty in getting permits due to local oppositions; 2) the tedious administrative procedure due to in situ government policies; and 3) the difficulty in accessing finance because of the scope of small companies that cannot compete with big energy companies and/or because these companies don't have sufficient assets/guarantee to entitle them for a loan.

3. Conceptual framework: what is multi-level decision-making energy transition perspective (MLP) and its significance in analysing the constraints in the renewable energy (RE) sector

Using the conceptual tools of energy transition (ET) theory, the author develops the analytical framework of this paper in explaining the abovementioned constraints to RE.

The transitions theory per se is not an entirely new concept as this has already been used by scholars before when explaining the changes and dynamism within a particular system. Transition, as defined by Oxfords dictionary, is "the process or a period of changing from one state or condition to another" [3]. The concept of transition was later adopted to explain changes in societies, and is now also used to explain the new phenomenon in energy-modernity within a sustainability perspective. The shift in the Dutch energy system away from coal to gas and renewables, for example, is widely acknowledged and studied in this area while taking note of the "complexity, nonlinearity and the multiplicity of the actors involved" in the transition [4]. With this in mind and how this is relevant in the Philippine context, the paper focuses on the multi-level decision-making perspective (MLP) of energy transition, where the socio-political conditions are emphasized. MLP is defined as

"...a middle-range theory that conceptualizes overall dynamic patterns in socio-technical transitions. The analytical framework combines concepts from evolutionary economics (trajectories, regimes, niches, speciation, path dependence, routines), science and technology studies (sense making, social networks, innovation as a social process shaped by broader societal contexts), structuration theory and neo-institutional theory (rules and institutions as 'deep structures' on which knowledgeable actors draw in their actions, duality of structure, i.e. structures are both context and outcome of actions, 'rules of the game' that structure actions).

[...] The MLP views transitions as non-linear processes that results from the interplay of developments at three analytical levels: niches (the locus for radical innovations), socio-technical regimes (the locus of established practices and associated rules that stabilize existing systems), and an exogenous sociotechnical landscape [5].”

MLP emphasizes that the existence of a greater tension between the “need for energy security in the light of growing demand and the need to reduce environmental degradation and check the rise of air pollutants and greenhouse gas emissions tied to climate change at the same time” [6]—a situation that is more pronounced in emerging economies. This tension is primarily triggered by the “socio-political conditions, including the political system, civil society actors or decision-making process, and the fragmentation that exists between and among these agents” [7]. Taking Philippines a country case, this paper highlights the dominant agents/players in the energy sector that affect the energy system and its so-called transition pathways. The analysis is, thus, framed as follows: first, by providing a historical background of the current energy context/regime; and second, by discussing how the current energy context and regime has contributed to constraints in the RE sector.

4. Results and discussions

4.1 The transition in energy policy and governance structure: A historical analysis of the Philippine electricity sector

Electricity first came in the Philippines in the 1890s during the Spanish era. Then in the 1900s, the Manila Electric Light and Railroad Company (more commonly known as MERALCO), which is owned by the Lopezes, one of the richest families in the Philippines, bought the franchise and took charge in delivering electricity to Manila and its adjacent cities [8]. Now MERALCO is considered to be the largest electricity distribution company in the Philippines.

In the 1930s, when the country gained independence from the Americans, it became a priority objective of the government to electrify the whole country for nation-building. With this, the government has aimed to develop its own indigenous energy resources. That is why by virtue of the Commonwealth Act 120 and now revised RA 6395, the National Power Corporation (NPC) was created to “undertake the development of hydroelectric generation of power and the production of electricity from nuclear, geothermal and other sources” [9]. NPC was a monopoly that dominates both the generation and transmission operations. By 1956, NPC had generated about one-third of the country’s total generation capacity while the remaining two-thirds were handled by private and municipally-owned electric utilities [8]. In the 1960s, the government saw through that the national electrification program reached the countryside thereby creating the National Electrification Act and accordingly establishing the National Electrification Administration (NEA). NEA is mandated to fasten the electrification efforts by providing loans, subsidies, and affordable electric rates, among others. As of December 2011, household electrification level stands at 70.2 percent and is targeted to increase to 90.0 percent by 2017 [2].

Until the 2000s, the electricity sector is nationalized and still primarily government-owned through NPC. Crises that led one to another has resulted into multitude of problems that is still felt today. This began in the 1970s when oil crisis hit the country, thus, had led to increased prices of imported energy, decreased foreign concessional loans, and hiked the cost of borrowing used for the government’s electrification program [10]. Domestic problems had likewise amplified the crisis during the Marcos era having fraught with corruption and government agencies’ mismanagement. One mothballed project that could have saved the country from dependency on energy imports was the Bataan Nuclear Power Plant. Due to allegations of corruption and fears after the Chernobyl incident, BNPP was stalled in 1985. The government spent USD 2.3 billion for its completion and up to this date is incurring yearly maintenance cost of around PhP 50 million (USD 1.06 million) for a project that was never utilized [11]. After the downfall of the Marcos regime and the installation of Corazon Aquino as the new president, the Department of Energy (DOE) was likewise abolished due to its alleged inefficiencies and corruption. This is also one of the means of the Aquino administration to reverse all

the policies of the Marcos dictatorship. But the dissolution of DOE had brought more damages to the already debilitating condition of the energy sector at that time. Without an agency to plan, manage and coordinate activities within the energy sector, power crisis became worse.

“Nationwide blackouts” continued until the early administration of the newly-elected President Fidel V. Ramos (or “FVR”). This has of course negatively affected the economy and resulted into massive unemployment. In hope to end the economic and power crisis at that time, then president Ramos was granted an emergency power by virtue of the Republic Act (RA) No. 7648, otherwise known as the “Electric Power Crisis Act of 1993”. Through RA 7648, the procedure to bid out government projects was fast-tracked thereby allowing the Independent Power Producers (IPPs) to immediately “construct, repair, rehabilitate, improve or maintain power plants, projects and facilities” [12]. A new policy called “take or pay” was also formulated which forced the distribution utilities to pay for a specified amount of power produced by the generation companies whether they like it or not [13]. The excess electricity was of course passed on to the consumers who now have to bear a higher electricity price.

In order to avoid a power crisis from happening again and to reduce the expensive electricity rate, the next president Gloria Macapagal Arroyo (or “GMA”) signed the Republic Act 9136 or the “Electric Power Industry Reform Act” (or the EPIRA Law) in 2001. The EPIRA Law goals to (i) disaggregate the industry into generation, transmission, and distribution; (ii) introduce competition in generation and supply; (iii) introduce a wholesale electricity spot market (WESM); (iv) privatizing generation and operation of transmission by a concessionaire; (v) introduce open access to distribution networks; and (vi) set up an independent agency to regulate the industry [14]. These goals are ultimately aimed at reducing the power cost and securing the country’s energy supply.

But until this moment, the EPIRA Law has failed to delivers its promises. The Philippines is still considered to have one of the highest electricity rates in Asia, even higher than a developed country like Japan. The country has also still been suffering from bouts of blackouts from time to time. That is why some scholars have argued that rules and regulations governing the EPIRA Law has actually created a condition for “oligopoly, monopoly” to thrive, more harm than benefits to the energy sector.

4.2 The dynamics and the dominant agents in the electricity sector under the EPIRA law

Analysing the dominant agents/players and decision-makers in each of the electricity sub-sector can shed light on the loopholes in the current electricity structure (Figure 1).

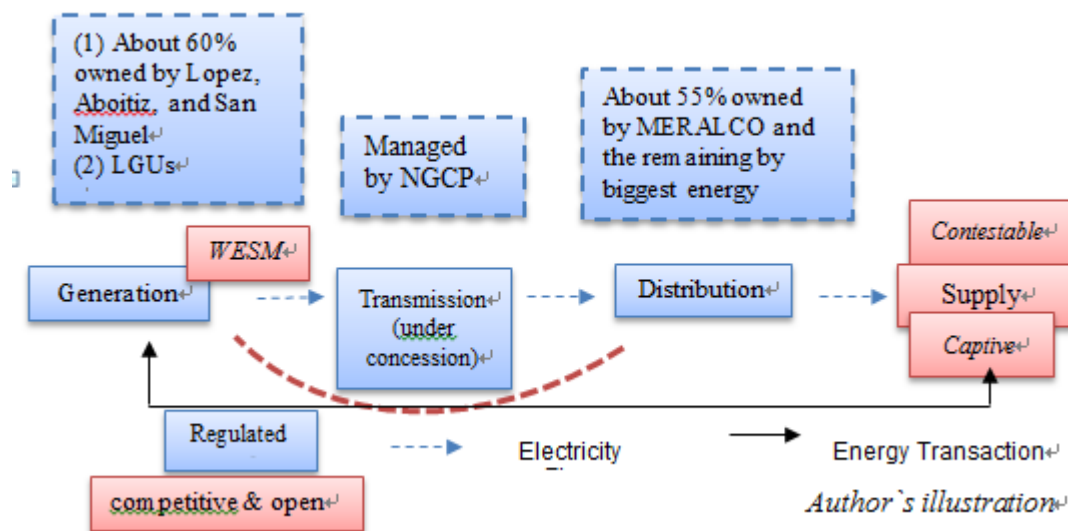


Figure 1. Dynamics and the Dominant Agents in the Electricity Sector

One, the current structure is monopolistic/oligopolistic in nature. Under Sec.45 of the EPIRA Law, a company/person or related group is allowed to supply energy demand to a maximum of 30% of the

installed generation capacity of a grid (e.g., Luzon grid) and 25% of the national installed generating capacity. Generation are owned by the largest companies in the Philippines like San Miguel (22%); Aboitiz (20%); and the Lopez (18%), thus, a combine share of around 60% of the total produced energy in the country [15]. The government-owned NPC respectively only have 8% and the IPPs only 18% shares nationwide [15]. The dominance of coal as the preferred energy source has continued to pushback RE on the sideline. The generation sub-sector is regulated primarily by the Energy Regulatory Commission (ERC) to ensure that generation companies “comply with standards set forth by relevant agencies and are not engage in market abuse or anti-competitive behaviour” [16]. Contradictory, ERC is accused of corruption and collusion.

Even energy developers will have difficulty building RE facilities if they every choose to do so. The Local Government Units (LGUs) can have powers that can rule out national directives, particularly pertaining to the issuance of permits and licenses, for example [17]. This is the result to the lack of knowledge on the benefits of RE plus the loose coordination between the national and local level of government. And because the approval of these permits and licenses can ultimately make or break an RE project, this has sometimes perpetuated bribery and corruption at the local level.

Second, the gradual privatization even of the government’s transmission assets have also provided additional cost especially to small time RE developers. TRANSCO (or the National Transmission Commission) is mandated to “assume authority and responsibility for the planning, construction, and centralized operation and maintenance of the country’s high voltage transmission facilities, including grid interconnections and ancillary services” [16]. In 2007, the National Grid Corporation of the Philippines (NGCP) won the concession for 25 years, and has assumed the responsibility of TRANSCO – part of the government’s plan to privatize its electricity assets. NGCP is a consortium of three (3) companies: Monte Oro Grid Resources Corp., Calaca High Power Corporation, and the State Grid Corporation of China (ngcp.gov.ph). NGCP is 60% Filipino and 40% Chinese owned. For small time RE developers that already have to shoulder additional costs due to bureaucratic procedures, delays, etc. transmission charges and the cost of transmission infrastructure can make RE financially inviable. One of interviewee said, “one of the greatest crimes committed to the Filipino people is the privatization of the grid” [17].

Third, the EPIRA Law allows cross-ownership. One example is the largest electricity distribution company in the Philippines, MERALCO, which has about 70% market share in Luzon, and about 55% market share in the whole country. In the pretence of cross-ownership clause under Sec. 45, a distribution company is “allowed source to from bilateral power supply contracts more than fifty percent (50%) of its total demand from an associated firm engaged in generation”[16] Following this, MERALCO has its own generation subsidiary, MERALCO Power Generation (MGen), which has an energy portfolio that is primarily coal and natural gas [18].

By 2020, MGEN aims to have a total of 3,000 MW installed capacity. Two big coal power plants are already in the pipeline and is targeted to be finished by 2018: the 1,200-MW in Atimonan, Quezon; and the 500-MW San in Buenaventura, Quezon [19]. MERALCO has also 40% stake at the the Calaca coal-fired plants, among others. Another example of this cross-ownership is Aboitiz Power which has three (3) distribution company-subsidiaries namely, the Visayan Electric Co., the Subic Enerzone Lima Enerzone, and the Davao Light [19]. MERALCO also has bilateral contracts with Aboitiz Power to supply the company with its energy demand, most of which are coal.

Fourth, the EPIRA Law is geared towards the privatization of all electricity assets owned by government. While this was a move to create a competitive market and to pay for the debts of NPC, this has done little, if nothing, to serve these supposed purposes. What is more infuriating the financial obligations incurred by NPC thought so-called stranded debt and stranded contract cost will be passed on to the consumers. Stranded debt (SD) refers to NPC’s “unpaid financial obligations which have not been liquidated by the proceeds from the sales and privatization of NPC’s assets”; while stranded contract cost (SCC) refers to the “excess of the contracted cost of electricity under eligible IPP contracts of NPC over the actual selling price of the contracted energy output of such contracts in the market” as a result of the “take-or pay” arrangement of the government during the power crisis in the 2000s [16]. NPC’s financial obligations reached PhP 943 billion in 2001 and climbed to an astonishing PhP 1.24 trillion in 2009 [13]. To pay for these ballooning debts, most of the assets of NPC were

either sold or concession or passed on to consumers. In 2017, ERC has allowed the NPC to recover a total of PhP 37 billion (PhP 24.2 billion for SD; P12.88 billion for SCC) from electricity consumers through a P0.0265 per Kwh “universal charge” for a period of nine (9) years [20]. “Universal charge” also includes costs for missionary electrification; the equalization of the taxes and royalties applied to indigenous or renewable sources of energy vis-a-vis imported energy fuels; and environmental fees meant for watershed rehabilitation and management [16].

5. Conclusions

Exploring the energy policy, context and regime within a multi-level decision-making perspective (MLP) of energy transition (ET) theory provided us insights on the challenges the RE sector in the Philippines faces. Beginning with a historical analysis has shown that past mistakes continue to have lingering effects until today. First, as the government tries to avoid the power crises and economic turmoil it suffered in the past, it centres its policy on energy security. This is more beneficial if only energy security is framed within a sustainability perspective. But in reality, this has brought about positive and negative consequences to RE development. It is positive because it has welcomed more diversity in the energy portfolio including renewables. But it is negative because energy security was framed towards the goal of only increasing generation capacity. Since conventional energies are already at an advantage to begin with, this makes it difficult for RE to compete. Thus, the current energy policy only led to more expansions on conventional energies (e.g., coal) whereas it made growth in RE sector stagnant over the years. In that sense, perhaps we can say a “false” energy security because the country remained very much dependent on imported fuels. Second, the creation of the EPIRA Law, which was supposed to make the electricity market competitive and to lower down the electricity rates, had failed. In upholding privatization and commercialization, the government had in the process withdrawn its power to “steer and manage” the energy policy that is most beneficial for the people. In the end, the EPIRA Law has paved the way for oligopoly/monopoly to thrive; has created a fragmented energy structure; and has allowed greater costs for the consumers. These abovementioned reasons we have shown in the paper poses constraints to the RE sector, and thus, is hindering the country from achieving a sustainable energy transition.

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