Institutional Landscape of Renewable Energy Development in Naujan, Oriental Mindoro

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Abstract

This study offers an overview of the institutional dynamics in relation to the local renewable energy development in the municipality of Naujan, Oriental Mindoro. In off-grid areas, like Naujan, renewable energy presents opportunities in meeting the required energy supply to sustain the growing demand of various economic sectors. The significant role of renewable energy further establishes the need to understand the institutional landscape pertaining to its development. The complexity of the institutional landscape is inherent in Naujan due to its social and geospatial characteristics. The presence of indigenous cultural communities and a protected area adds additional institutional layer for the implementation of different renewable energy projects within the municipality. The results of the study illustrate the different current and potential renewable energy sources in the area. The regulation of the different renewable energy projects in Naujan under different national government agencies, whose mandates are stipulated by national policies. Some of these important national policies include the Renewable Energy Act of 2008, Biofuels Act of 2006, and the

National Integrated Protected Areas System. The study likewise identified other institutional dynamics among various actors of the renewable energy sector, such as the provision of technical assistance and support to rural development.

Keywords: Off-grid, Energy Policy, Philippines, Rural Electrification

Introduction

National governments are continually striving to respond to the global concerns of climate change, pollution, and rural development (Brahim, 2014; Martinot et al., 2002). This has been the experience of countries within the Southeast Asian region (Erdiwansyah et al., 2019). The gradual shift to alternative sources of energy provides opportunities for national economies to align their economic growth with the thrusts of sustainable development. This search for a more sustainable source of energy has led countries to various renewable energy (RE) sources. The RE transition has been an integral part of national energy development plans, which puts forward an increase in the energy mix diversification (i.e., combined conventional and renewable energy) (Brahim, 2014). Policy mechanisms have been placed by national governments to institutionalize the support to the development of renewable energy. The energy development agenda of the Philippines has highlighted the importance of renewable energy development. Among the current challenges of the country is ensuring a stable and sustainable energy supply, especially in remote areas (Bertheau, 2020). RE thus offers a significant position in rural electrification in the country, especially with its vast off-grid areas. The energy statistics of the Philippines illustrates the significant share of renewable energy in the national energy supply of the country. Although the Philippines has been highly dependent on coal as its primary energy source from 2003 to 2020, renewable energy generation has also continuously increased (DOE, 2021). For almost two decades, the growth of renewable energy in terms of power generation increased by more than 20 percent and an average energy share of 28.27 percent (DOE, 2021).

Among the potential reasons for the continued growth of the renewable energy sector in the country is the favorable policy environment. Brahim (2014) mentioned that the Philippines has laid out plans and enacted different national-level policies, which could further support the development of the RE sector. An important milestone for the Philippine RE was the enactment of Republic Act 9513 or the Renewable Energy Act of 2008. This national policy established an important institutional platform for the development and promotion of RE across the country through various fiscal and technological support mechanisms. Aside from this national policy, other relevant policies were also put in place to ensure the sustainable and socially acceptable implementation of renewable energy projects. These national policies include those that ensure the conservation of natural resources and the protection of the rights of the local communities.

The implementation of these policies is grounded on several factors. The local context of RE development provides structure to how policies are implemented. Further, the dynamics and relationship of various actors can also be argued as different depending on the context where RE projects are implemented. Understanding the context and these development dynamics within a particular area offers valuable insights on how to plan or approach the development process. In this paper, an overview of the institutional landscape of renewable energy development within the context of Naujan is provided. This paper aims to describe the dynamics of different national and local development actors in relation to the implementation of various renewable energy projects in the municipality. The discussion in this paper is primarily based on the provisions of relevant national policies.

Renewable Energy Development in Naujan

The Municipality of Naujan along with the whole island province of Oriental Mindoro are being supplied through an off-grid energy system. It means that the energy system is not connected to the main or national grid, which requires them to depend primarily on local generation of the needs of its population (IRENA, 2015).

With the increase in population in the municipality and the province (i.e., 1.54 annual growth rate recorded from 2010-2020 based on PSA report for 2021), there is an increasing pressure on the local energy system to increase its production. To add further, potential increases in energy demand can also be attributed to a shift in local livelihoods such as from agriculture to a more energy demanding industry such as commercial and tourism industries.

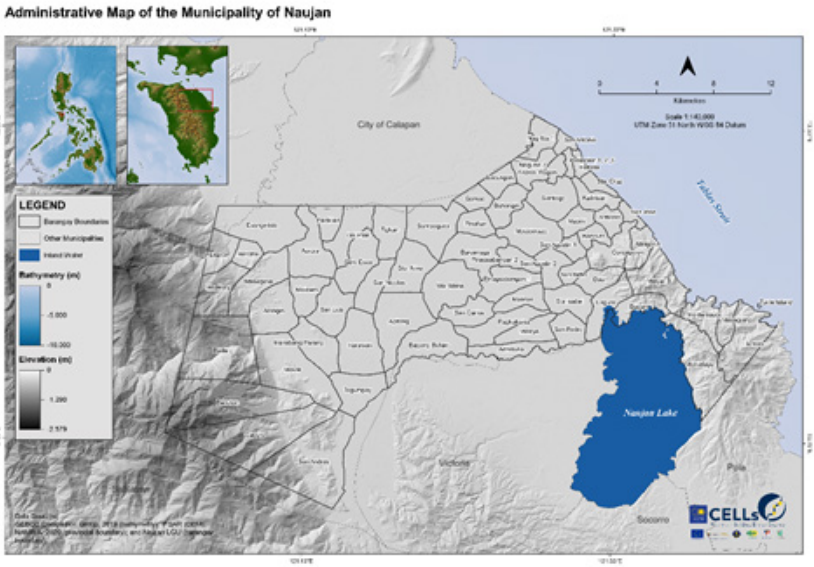
As a response to the growing energy demand, there is a need to continually explore potential energy sources, especially renewable energy sources. This contribution can be increased further through the utilization of the natural resources in the municipality, which can be used in RE production. However, it is crucial to understand the different institutional arrangements and policies that could affect the design and implementation of RE projects. In this paper, these institutional arrangements and policies are discussed in relation to the local socio-cultural and geospatial context of Naujan. This paper further highlights that RE development may take different forms due to the interlocking web of policies, which correspond to its local social, cultural, and environmental context.

Materials and Methods Locale of the Study

The Municipality of Naujan was selected as the case study area for the study. It was a first class municipality of the province of Oriental Mindoro. Naujan is politically subdivided into 70 barangays (Figure 2). In 2020, it had a total population of 109,587 (Philippine Statistics Authority, 2021). The population of the municipality is highly dependent on agriculture, having a substantial percentage of its land dedicated to the sector ("Local Government Unit of Naujan", 2001). Some of its agricultural products include rice, banana, and coconut. Aside from agriculture, tourism and commerce are also considered to be integral in the economy of Naujan.

Figure 1

The Municipality of Naujan



Naujan offers a complex case in relation to the study of RE development. Its complexity is rooted in its geospatial and social characteristics. These characteristics of the municipality affect the kind of policies that are relevant to the governance of its RE development. The presence of Naujan Lake, a declared protected area, and of the Alangan Tribe in the municipality rationalizes the importance of other institutional players in relation to the development of different RE projects. The cooperative-led energy production and distribution in Naujan likewise adds to this complexity.

Analytical Process

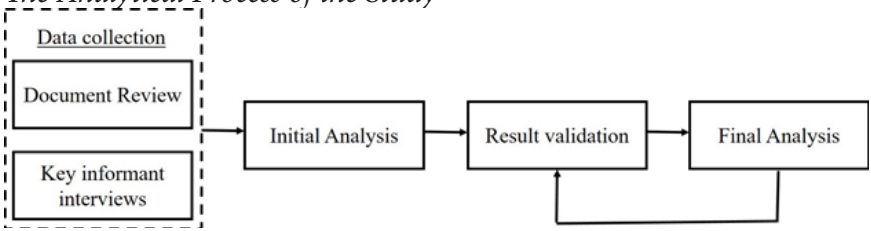
The first part of the research process involves document reviews and a series of key informant interviews (KII). The documents were collected from different national government agencies and local government offices. These pertinent documents included different national policies, Philippine energy development plans, comprehensive land-use plan (CLUP) and the comprehensive development plan (CDP), and the ecological profile of Naujan.

These documents were gathered from the official website of the Philippines' Department of Energy (DOE), the Philippine Official Gazette, and from the Local Government Unit (LGU) of Naujan. On the other hand, KII for the study includes representatives from the different local government offices, Department of Energy-Renewable Energy Management Bureau (DOE-REMB), and Department of Environment and Natural Resources (DENR). With the travel restrictions due to the COVID-19 pandemic, primary data collection was a combination of physical visits to the study area and virtual meetings. The latter was done through Zoom (i.e., a digital meeting platform) and phone calls. Prior to each interview, an informed consent form was sent and accomplished by key informants to have their consent for the data collection and the process documentation.

Data processing and analysis were done through an iterative process (Figure 1). Institutional analysis was used in understanding the dynamics of local RE development in Naujan. Institutional Analysis is an analytical technique that allows researchers to understand the rules in place (Crawford & Ostrom, 1995). These rules include the different institutional arrangements based on the policies which are being implemented by various governing entities. Within the process of understanding these rules, it is important that researchers recognize that institutional arrangements can be subjected to multiple policies (Hollingsworth, 2000). Although there are formal and informal institutional arrangements, the study only focused on the formal institutional arrangements that were based on the different national policies. The results of the initial analysis, especially the flow and relationships that were identified, were then subjected to validation. The validation process involved the presentation of results with representatives from DOST-REMB. Once the initial validation was done, necessary adjustments to the results were made and once again reviewed by representatives from DOST REMB.

Figure 2

The Analytical Process of the Study



Results and Discussion

Renewable Energy in Naujan from Production to Distribution

The position of RE sector has a significant position in the local energy consumption in Naujan and in the whole province of Oriental Mindoro. In 2015, Oriental Mindoro Electric Cooperative, Inc. (ORMECO) reported that there were at least five energy suppliers, which were generating energy from renewable energy sources. Figure 3 shows the current and potential local energy sources as well as the sectors which are utilizing the energy within Naujan. The major RE source being supplied to ORMECO is hydropower plants, which are located in different areas in the province. These include the Dulangan Mini Hydro Power Plant, which is owned and managed by ORMECO, and Lower Catuiran Hydroelectric Power Plant constructed by the Sta. Clara Power Corporation. These hydropower plants are both located in Naujan and harness the energy from its natural river system.

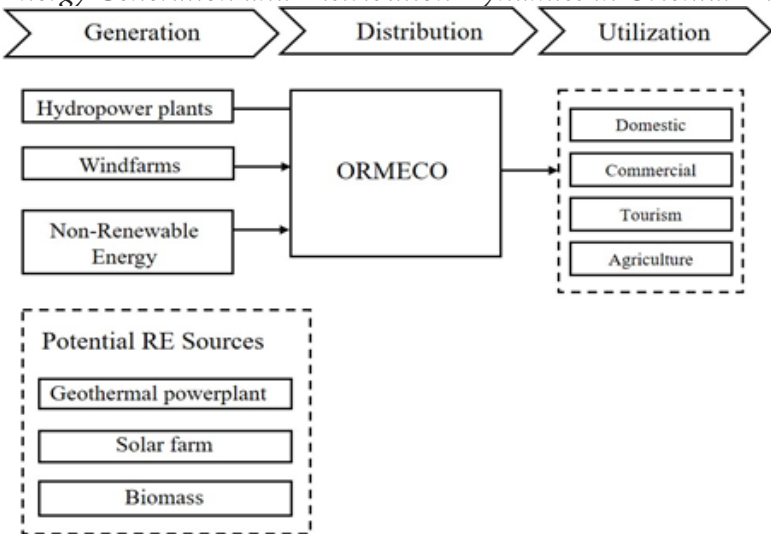
Another current local RE source is the wind farm, which is located Puerto Galera, a municipality in the northern part of Oriental Mindoro. Although not located within Naujan, the wind farm owned by the Philippine Hybrid Energy Systems, Inc. (PHESI) also generates energy that is being utilized by different sectors within the study site. Given the current energy demand of the province, conventional or non-renewable sources of energy also contribute to the local energy supply of the province. As illustrated in Figure 3, the sole energy distributor in Najuan and in the whole province of Oriental Mindoro is ORMECO. The electric cooperative was

established through the assistance of Provincial Electric Cooperative Team (PECT) and was registered in 1973 (ORMECO,1973).Although there were concerns raised by research participants in relation to the local energy supply, the importance of ORMECO in the whole island province of Oriental Mindoro is again attributed to its nature as an off-grid area.

Other potential sources of energy were also identified in the study. These were geothermal power plants, solar farms, and biomass. The geothermal power plant in Brgy. Montelago, Naujan had been built for years; however, research participants shared that it was not generating energy due to the insufficient heat being produced in the area. There were also proposals to establish floating solar farms. These were proposed to be located on Naujan Lake. According to research participants, this proposal did not push through due to concerns related to its possible detrimental effects on the ecosystem of the lake and the livelihood of the local community. Lastly, biomass was considered also as an option given the abundance of agricultural raw materials in the area. In particular, research participants mentioned that biomass could potentially be generated even at small scale using rice straws produced in numerous rice-producing barangays in Naujan.

Figure 3

Energy Generation and Distribution Dynamics in Oriental Mindoro

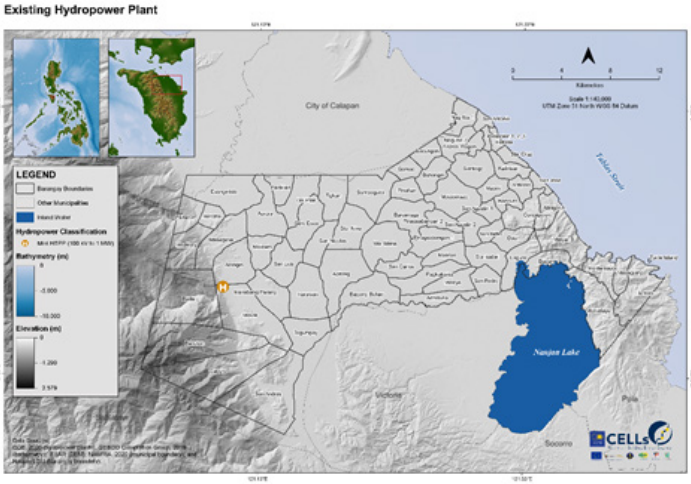


Social and Geospatial Characteristics of Naujan

The different social and geospatial characteristics of a municipality contribute to the complexity of implementing renewable energy projects. The presence of a protected area within the political jurisdiction of Naujan is one of the sources of complexity in local RE development. The Naujan Lake National Park, which is located in the southeastern portion of Naujan (Figure 4), is a declared protected area through Proclamation No. 335 series of 1968. As illustrated in Figure 3, the lake is within the political jurisdiction of three other municipalities of Oriental Mindoro, which are Polo, Socorro, and Victoria. The lake provides livelihood to a large population from the four municipalities through fishing (Pasumbal & Perez, 2001). Apart from the abundance of fish stocks on the lake, the presence of migratory birds also strengthens the significant position of Naujan Lake as a protected area (see Villamor, 2006). Research participants argued that any proposed development project within the lake should ensure that it would not have detrimental effects on the lake and its stakeholders.

Figure 4

The Location of the Existing Power Plant within Naujan



(Data source: Municipal Planning and Development Office of Naujan)

Naujan also serves as home to the Alangan Tribe, one of the eight groups of indigenous people in Mindoro Island. The eight groups of indigenous people (i.e., Alangan, Sibuyan, Hanunuo, Buhid, Tau Buid, Tadyawan, Ratagnon, Bangon, and Iraya) are more collectively and commonly known as Mangyan (Mendiola, 2013). The presence of indigenous cultural communities (ICC) within an area calls for a more careful approach in the development process. It means that prior to the implementation of any development project such as the case of any RE project, the rights of the members of the ICC should be considered and respected. Based on the discussions with research participants, the members of the ICC in Naujan raised concerns regarding potential infrastructure projects, particularly large RE projects. These concerns were grounded in the perceived negative outcomes of these projects in the local community such as an increase in flooding incidences and intensity. Most importantly, these resulted in the low acceptability of the ICC of the different infrastructure projects. Therefore, it is critical for the RE developers to have effective communication with ICCs, especially to provide assurance that their concerns will be addressed.

Finally, the municipality along with the island provinces of Oriental and Occidental Mindoro are considered off-grid areas. In these areas, electric cooperatives have been instrumental in the management and distribution of energy to the consuming public. Electric cooperatives have been established to respond to the challenges of energy supply (Bertheu et al., 2020). In the case of Naujan, ORMECO serves as the electric cooperative that caters to the energy needs of the local communities. The cooperative-led set-up of electrification in the province creates another important consideration in the implementation of RE projects. It reiterates the importance of close coordination between ORMECO and other RE developers to address specific issues, such as responding to the growing local energy demand.

Philippine National Renewable Energy Policies

The development of RE sector in the Philippines is dependent on a network of national policies. Two policies, in particular, have

been enacted as primary policy instruments to encourage the growth of the renewable energy sector in the country. Republic Act 9367 (RA 9367) or the Biofuels Act of 2006 and Republic Act 9513 (RA 9513) or the Renewable Act of 2008 can be regarded as significant measures in realizing the development goals of the country in relation to its energy sector. Moreover, these national policies are designed to support the renewable energy sector by removing critical roadblocks, which include "high upfront and technology costs, noncompetitiveness, non-viable markets, inaccessible financial packages, and social acceptability" (Brahim, 2014, p. 482).

These national policies strengthen the RE sector through the provision of several support mechanisms to current and potential industry actors. For instance, both RA 9513 and RA 9367 offer fiscal incentives to the producer of RE such as tax exemption. Other incentive schemes stipulated in either of these national policies include financial support and duty-free importation. The tax exemption and duty-free importation are not exclusive to large RE developers. They are likewise extended to farmers who are engaged in crop production for the utilization in the generation of biomass resources (RA 9513; RA 9367).

Implementing the provisions of these national RE policies are designated to the DOE. The DOE is mandated to spearhead renewable energy programs, which are designed for the development of the sector. The creation of the Renewable Energy Management Bureau (REMB), a bureau under DOE, is also a significant provision under RA 9513. Among the principal functions of REMB includes the development of plans, programs, and policies (RA 9513, Section 31a), which are critical in the advancement of the Philippine renewable sector. To support DOE and its bureaus in implementing these national policies, other government agencies are mandated by these national policies to serve specific functions. Rosellon (2017) explained that these functions and mandates provided to these government agencies can be both technical and procedural in nature. Procedural functions include the certification of RE projects prior to their implementation (Rosellon, 2017).

To further consolidate the efforts of government agencies along with the private sector, two collegial bodies were established.

The National Renewable Energy Board (NREB) and the National Biofuel Board (NBB) were created through RA 9513 and RA 9367, respectively. The composition of these collegial bodies is enumerated in Table 1. These collegial bodies monitor the overall implementation of the different provisions of the national renewable energy policies. In addition, NREB and NBB also provide policy recommendations on specific courses of action for the implementation of DOE. The multisectoral composition of these collegial bodies creates opportunities for a more integrated approach in RE development.

Table 1

Composition of Philippine RE Collegial Bodies Created under RA 9513 and RA 9367

COLLEGIAL BODY	MEMBERS
National Renewable Energy Board	Department of Energy Department of Trade and Industry Department of Finance Department of Environment and Natural Resources National Power Corporation National Transmission Commission Sectoral representatives from Renewable Energy Developers, Government Financial Institutions (GFI), private distribution utilities, electric cooperatives, electricity suppliers, and non-government organizations (NGO)
National Biofuel Board	Department of Trade and Industry Department of Science and Technology Department of Agriculture Department of Finance Department of Labor and Employment Philippine Coconut Authority Sugar Regulatory Administration

In the case of Naujan, these national policies have a critical role in the development of local renewable energy projects. As explained by research participants, these national policies served as the main foundations in approving and implementing the different RE projects in the municipality. With the current RE developments in Naujan, RA 9513 has been mainly the more relevant between the two national policies especially since biofuels production was not being focused on the local level. Research participants mentioned that the provisions under RA 9513 along with the Republic Act 9136 ensured that the host communities were able to benefit directly from

RE development. But as discussed further in the following sections, these national policies should be complemented by other national policies to create additional safeguards for the communities and environment. This is particularly important in the context of Naujan with its complex socio-cultural and environmental characteristics. Therefore, aside from DOE, other national government agencies and offices from the LGU likewise serve a critical role in striking a balance between meeting the local energy needs and conserving and protecting the environment and the rights of the local stakeholders.

Regulation of Local Renewable Energy Development

The implementation of RE projects is subjected to an interlocking web of national and local policies. Figure 5 illustrates the different governing bodies that are mandated to regulate RE projects. These governing bodies include the different relevant national government agencies and local government units. In addition, two organized bodies are also reflected in Figure 5. These organized bodies are created to assist in the policy and decisionmaking process concerning various development projects such as renewable energy projects. Figure 4 likewise shows what kind of renewable energy projects are being regulated by the different national government agencies and local government units. This further establishes that the social and geospatial characteristics of the communities in Naujan have an influence on the regulatory dynamics pertaining to renewable energy development.

Department of Energy (DOE)

DOE was established through the enactment of Republic Act 7638 or the Department of Energy Act of 1992. RA 7638 mandates DOE to serve as the primary government agency that designs programs and policies to ensure an "efficient energy supply" for the country. Upon the enactment of RA 9513, additional and more specific roles were given to DOE in line with the RE development in the RE sector from the national to the local level.

National Electrification Administration (NEA)

As an electric cooperative, ORMECO has options to either register with the Cooperative Development Authority (CDA) or with the National Electrification Administration (NEA) (RA 9520). As per ORMECO (ud), the electric cooperative has been registered with NEA since it was organized. Among the principal functions of NEA, as stipulated in Republic Act 10531 (RA 10531) or the National Electrification Administration Reform Act, are the supervision of electric cooperatives, and the provision of technical, financial, and institutional support services to electric cooperatives, which need these services. These support services being provided by NEA are aligned with their creation mandate to assist electric cooperatives along with "other public service entities engaged in supplying electric service" (Presidential Decree 269 or the National Electrification Administration Decree).

National Commission for Indigenous Peoples (NCIP)

In implementing RE projects, developers including ORMECO need to secure several permits prior to their exploration and operations. The presence of ICCs in the area establishes the need for either a certificate of precondition or a certificate of non-overlap, which are both being issued by the NCIP. Aside from securing these certificates, NCIP also secures the rights of the members of the ICCs from the different development projects (IPRA, part 2 section 1a). The aforementioned local concerns of the ICC members further strengthen the responsibility of the NCIP to ensure social acceptability of any proposed RE projects in Naujan. Specifically, the NCIP should ensure that any proposed RE projects within the designated ICCs should undergo the necessary process of acquiring the consent of the members of the ICCs.

Department of Environment and Natural Resources (DENR)

RA 9513 states that RE projects should be implemented in compliance with the different environmental policies (Section 14).

As the foremost environmental government agency of the country, DENR regulates the implementation of RE projects in the country such as those that are carried out in Naujan. Among the notable environmental regulations that cover development projects are DENR Administrative Order 30 Series of 2003 (DAO 03-30) and DENR Administrative Order 59 Series of 2004 (DAO 04-59). DAO 03-30 stipulates the necessary procedures in relation to the environmental impact assessment that a development project needs to undertake prior to its implementation. Depending on the nature of the development project and the area where it is implemented, the Environmental Management Bureau (DENR-EMB) issues a certificate if the project is allowed to proceed.

The different RE projects in Naujan underwent this process. Especially in the case of projects proposed within a protected landscape, it is emphasized in the Republic Act 11038 (RA 11038) or the Expanded National Integrated Protected Areas System Act of 2018 that RE projects should be allowed based on a set of conditions. These conditions are as follows: (1) the projects are implemented outside the strict protection zone; (2) they underwent the EIA process; (3) they use "reduced impact technologies"; and (4) enough bond was given by the renewable energy developer (RA 11038, Section 14). In addition to the EIA process, development projects that are implemented within forestlands should also secure a Forest Land Use Agreement (FLAg) as stated in DAO 04-59. In securing FLAg, the RE developer should secure several requirements from various agencies, such as those coming from EMB, NCIP, and LGUs. Although this is a long and tedious process, the research participants emphasized its importance since it acts as safeguard against potential environmental threats coming from large development projects, which include RE projects.

In 2018, Virola (2018) reported that the members of the ICCs urged the DENR to suspend the environmental compliance certificates (ECCs) of the hydropower plants in Naujan and its neighboring municipalities. This request was based on their concerns with the use of explosives during the construction (i.e., mainly during tunneling) of new hydropower plants in the area. The ICC members argued that these explosions have detrimental effects to

the environment (Virola, 2018). The concerns of the ICC members on these explosions, along with the earlier mentioned perceived contribution of the hydropower plants on flooding, were important bases to review the risks associated with large RE projects. Once the risks are thoroughly assessed, the results should be communicated by DENR, along with LGU and DOE REMB, to the local communities.

Protected Areas Management Board (PAMB)

The creation of PAMB within declared protected areas in the Philippines is provided under Republic Act 7586 (RA 7586) or the National Integrated Protected Areas System (NIPAS) Act of 1992. An initial list of members of PAMB was provided in RA 7586, but it was then amended through RA 11038. The members of the PAMB include representatives from both the public and private sectors. The public sector is represented by regional directors of relevant NGAs such as DENR and DOST, legislators from the senate and congress, and heads of LGUs from provincial all the way to barangay level (RA 11038, Section 11). PAMB also has members from other sectors such as the academe, IP communities, and non-government organizations.

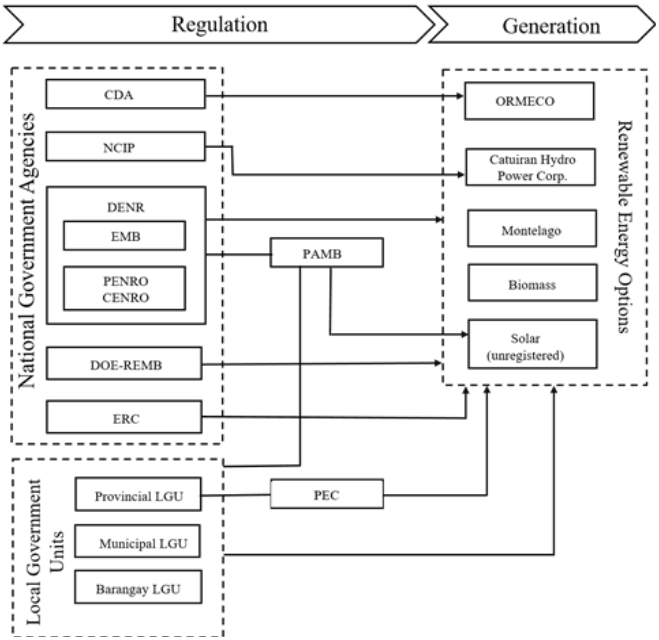
In the case of Naujan, PAMB was organized to ensure the conservation and protection of Naujan Lake. Since these are the priorities of PAMB, they will not permit any development projects that may negatively affect the ecological integrity of the lake. To cite a case, a proposed floating solar farm was denied by PAMB. This floating solar farm was planned to cover a significant area of the lake. Research participants explained that given the area coverage of the project, it might disrupt the natural flow and dynamics of its flora and fauna. To add further, research participants also mentioned the concerns of the local communities in relation to the project's potential negative effects on their livelihood. Although the RE project could provide benefits to the local community by catering to the growing local energy demand, the denial of PAMB reiterates the need for the RE developers to consider the negative environmental and socioeconomic effects of their proposed projects.

Local Government Units (LGUs)

It was earlier mentioned that in securing FLAg, RE developers need to secure endorsements from the LGU heads as among its requirements. To add further, Republic Act 7160 or the Local Government Code of 1991 states that it is the role of the LGUs to regulate and give clearances to businesses operating within their respective jurisdictions. LGUs are also mandated to regulate the utilization of land for any activities within their respective jurisdictions. Particular to energy development, RA 7160 requires that 80 percent of the income that is generated through energy operations such as geothermal plants should be utilized "solely" to reduce the electricity cost of the municipality (Section 294). These mandates establish the critical role of LGUs in RE development in Naujan. Without the permits given by the provincial government of Oriental Mindoro and the municipal government of Naujan, as well as the clearances from the different barangays, RE projects would not move forward.

Figure 5

Institutional Actors of the Local Renewable Development in Naujan



Other Local Renewable Energy Development Dynamics

The development of the RE sector within Naujan was not only dependent on the different organizations, both public and private, as illustrated in Figures 4 and 5. Policymakers, development organizations, and RE developers should also acknowledge other local institutional actors and understand how they could affect the development process. Based on the discussions with various research participants, other important institutional actors were identified. These institutional actors along with their relationships are illustrated in Figure 6. It is shown that the existing relationships and dynamics between these institutional actors could either be beneficial or otherwise.

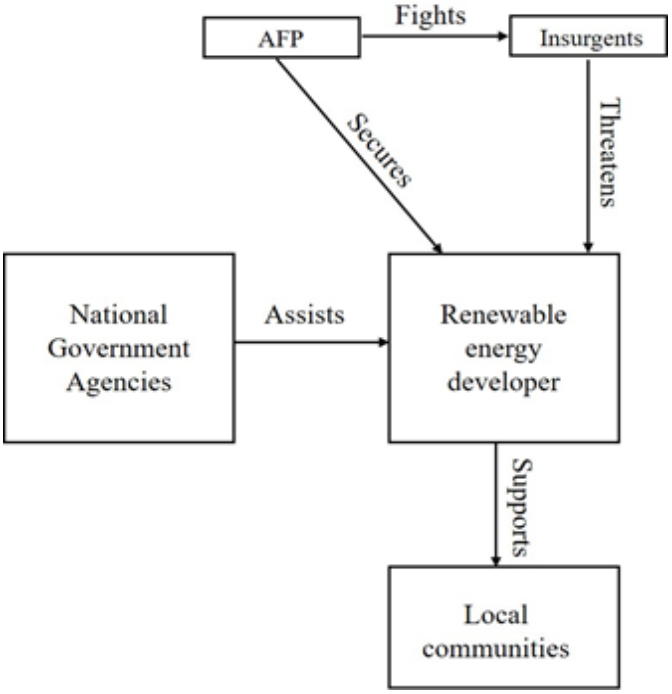
RE development in Naujan was threatened by security issues, especially those coming from local insurgents. Research participants shared that there were incidences where insurgents caused destructive activities in RE power plants. This security concern had a significant effect on the operations of the project developer. In particular, this destructive incident resulted in major delays in the operations of the powerplant. Nonetheless, the presence of the Armed Forces of the Philippines (AFP) within the area had alleviated this security concern. More importantly, this allowed the continued operations of the RE project developer. AFP personnel were stationed within the premises of the RE project, and as shared by research participants, they conducted regular security monitoring within the area.

tNon-Government Organizations (NGOs) were also among the important development actors within the context of the RE sector in Naujan. NGOs operating in Naujan had a critical position in the overall process of development projects within the locality. Depending on the positions of these NGOs, renewable projects can be delayed or even derailed. In the case of Naujan, research participants argued that NGOs had a strong position in influencing the perception of the local stakeholders on both the positive and negative effects of RE projects. Among these NGOs is Batang Naujan, a government-registered organization that conducts various initiatives to uplift the welfare of the local community. This NGO was also active in assessing the impacts of different RE projects,

particularly the hydropower plants and geothermal power plants. Development projects in the Philippines are mandated by national policies to support their host communities. Under the provisions of Energy Regulations 1-94 (ER 1-94), "one centavo per kilowatt-hour of electricity sales" of generation facilities shall be allocated for development projects for the host communities. Specifically, these funds are divided into (1) electrification funds, (2) development and livelihood funds, and (3) reforestation, watershed management, and health and/or environmental enhancement funds (ER 1-94). In addition, section 31 of RA 9513 states that members of the host communities should also benefit from RE projects through power consumption subsidies. Through these provisions, members of the host communities can realize the benefits from RE projects faster. These provisions can also increase the social acceptability of the local stakeholders towards RE projects.

Figure 6

Other Relevant Actors in Local Renewable Energy Development in Naujan



Conclusions

RE development is grounded in an interlocking network of national policies. The implementation of these policies is influenced by the context of the local community where renewable energy projects are implemented or proposed to be implemented. In Naujan, the institutional landscape of RE development illustrates complexity due to its inherent social and geospatial characteristics. Although these national policies provide institutional layers on the local renewable development, they serve as safeguards in ensuring that the overall development process will not lead to various environmental and social issues, such as those related to conservation and protection of natural resources, which are available in the area. While RE development offers benefits to the local economy, policies are in place to ensure that it would not negatively affect the rights of the local stakeholders such as in the case of indigenous cultural communities.

This study offers a crucial step in understanding the local RE in Naujan. Although it is descriptive and exploratory in nature, the results can offer energy practitioners insights into designing mechanisms to support the overall development process. Finally, this study recommends the conduct of future studies to further dissect the complexities in the local RE development, not only in Naujan but also in other off-grid areas in the country. These future studies can consider identifying both institutional opportunities and challenges that can either strengthen or impede the local RE development in their selected study areas. These studies could provide important theoretical and practical learnings on the current institutional context of local RE development in the Philippines.

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