



Exploring the Nexus Approach in Forest Conservation and Energy Access for Policy Integration and Coherence in the Philippines

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Abstract

The forest conservation and energy access nexus, with climate change looming large in the horizon, is considered as one of the paramount concerns in the Anthropocene. The imperatives to adapt to and mitigate the changes spawned by the Anthropocene put pressure on legal systems to respond and adjust. This entails a more holistic examination of closely intertwined issues such as those arising from forest conservation and energy access to enhance coherence, support integrated approaches, and promote cross-sectoral collaboration.

Although many of the global challenges are interconnected, they tend to be addressed separately. This has resulted in what is described as “policy- and decision-making in silos,” which impedes the creation of an enabling environment for policy integration and coherence in otherwise interlinked sectors to the detriment of the most vulnerable and marginalized in society, especially the household as the basic social and consumption unit.

In the Philippines, the forest conservation and energy access nexus remains unexplored in the context of the country’s institutional, legal, and policy frameworks, which is reflected in the lack of research and literature looking into such linkages. Accordingly, this chapter introduces the nexus approach for the first time as an analytical and exploratory tool. It propounds that such an approach has the potential to uncover the gaps in the forest and energy policy environment and enhance integration and coherence to attain common or shared objectives. Increasingly, the nexus approach is recommended to analyze coherence of policy goals and instruments in order to achieve consistency across different sectors and institutions, especially against the backdrop of climate change that is often described as a defining challenge for present and future generations.

Introduction

The forest conservation and energy access¹ nexus, with climate change looming large in the horizon, is considered as one of the paramount concerns in the Anthropocene (Timko et al. 2018). The Anthropocene “signifies a period in geological time where humans are considered the dominant forces equalling the great forces of nature that catapulted the Earth into earlier geological epochs” (Kotze 2014). This triggers changes in the relationship between humans and the ecological, biological, and physical systems on the planet, as exemplified by climate change (Lazarus 2004), including irreversible loss of biodiversity (Biber 2017). In turn, the imperatives to adapt to and mitigate the changes spawned by the Anthropocene put pressure on legal systems to respond and adjust (Biber 2017). This entails a more holistic examination of closely intertwined issues such as those arising from forest conservation and energy access to enhance coherence, support integrated approaches, and promote cross-sectoral collaboration (Tidwell 2016).

Although many of the global challenges are interconnected, they tend to be addressed “singly, at times reducing one problem while exacerbating others,” that is, addressing one of the components may lead to “leakages” or “spillovers” that negatively impact other areas (Liu et al. 2020). For example, policymakers are often confronted with the difficult trade-offs between the competing demands for forest conservation and energy access, which are viewed and tackled historically as sectoral and separate institutional concerns. This has resulted in what Hoff describes as “policy- and decision-making in silos” (2011) that impedes the creation of an enabling environment for policy integration and coherence in otherwise interlinked sectors to the detriment of the most vulnerable and marginalized in society, especially the household as the basic social and consumption unit.

As the global energy demand soars, high fossil fuel prices and increasing greenhouse gas (GHG) emissions are prompting the search for alternative energy solutions such as biomass energy from wood by-products, among others. However, this could result in pressure on forests and lead to forest clearance, if not accompanied by clear, coherent, and well-enforced policies and regulations. As the Food and Agriculture Organization (FAO) Report on the State of the World’s Forest highlights, clear legal frameworks and coherent policy measures are integral to creating the enabling environment to strengthen “forest pathways to sustainable development” (2018). And yet, the forest conservation and energy access nexus remain unexplored in the context of the Philippine institutional, legal, and policy frameworks, which is reflected in the lack of research and literature looking into such linkages in the country.

This dearth in research and literature can be attributed, as mentioned earlier, to a fragmented approach separating forest and energy along sectoral and institutional lines spanning several decades. It is also perpetuated by laws

that essentially focus on the production and development of single resources, such as the 1970s era Presidential Decree (PD) No. 705 or Revised Forestry Code of the Philippines (which needs updating). Moreover, the situation is mirrored, for example, from the failure among various forest and energy actors to recognize the nexus, treating them as separate systems and ingraining a business-as-usual approach that effectively delinks both sectors. There are other plausible reasons for this significant gap in knowledge products that link forest conservation and energy access, the exploration of which is ripe for further studies.

In the above context, the chapter introduces the nexus approach for the first time as an analytical and exploratory tool. It propounds that such an approach has the potential to uncover the gaps in the forest and energy policy environment and enhance integration and coherence to attain common or shared objectives. Increasingly, the nexus approach is recommended to analyze coherence of policy goals and instruments in order to achieve consistency across different sectors and institutions (Papadopoulou et al. 2020), especially against the backdrop of climate change, which is often described as a defining challenge for present and future generations. Notably, the chapter is consistent with the Forest Foundation Philippines' knowledge and management goals to enrich academic inquiry, contribute to the literature, and promote an enabling environment for the sustainable management of the country's forests.

For purposes of the study, an iterative approach involving archival research, desktop reviews, and document analysis was undertaken. The research also relies on the review of available and relevant literature through data provided by pertinent government agencies, results of studies undertaken and/or commissioned by government agencies and international organizations, scholarly works, and information provided by other relevant stakeholder reports. Through the foregoing methodology and utilizing the nexus approach, the institutional, legal, and policy issues, as well as concerns and opportunities, in linking forest conservation and energy access are examined and contextualized in the Philippines. The options and pathways to enhance forest conservation and energy access policy integration and coherence are encapsulated in the concluding part of the chapter.



The Nexus Approach

Background

The Latin term *nexus* refers to identifying and establishing the “important connection between the parts of a system or group of things.”² As a conceptual tool for analysis, the United Nations University first introduced this approach in its food-energy nexus programme in the 1980s. It is essentially premised on the proposition that interconnected and interdependent problems of access to food and fuel invites an integrated and comprehensive policy response (Silk and Sach 1991). It took a while before the nexus approach took hold in the international academic and policy spheres, until the Bonn 2011 Conference “Water, Energy and Food Security Nexus – Solutions for the Green Economy,” organized by the German Federal Government.

The Bonn 2011 Conference advanced the argument that the water, energy, and food nexus approach can result in improved water, energy, and food security by integrating “management and governance across sectors and scales;’ reducing trade-offs, building synergies, and promoting sustainability and a transition to a green economy” (Hoff 2011, cited in UNU-FLORES n.d.). It is noted, however, that while there has been heightened interest in the nexus approach since then, there is no single universally recognized or accepted definition of the nexus approach in the international academic and policy arena. Instead, its concurrent definitions depend on motivation, usage, and context, “with partly overlapping, partly diverging foci” (UNU-FLORES n.d.). Therefore, there is a need to define the nexus approach in this research context.

While the nexus approach has positive features and an upswing in usage rate in the academic and policy arenas, Albrecht et al. argue that there is a need to delve deeper into the social and political dimensions beyond the typical economic and environmental management approaches (2018). In addition, there is still no empirical evidence to support the argument that the intended benefits (i.e., improved management and governance outcomes) arising from the nexus approach have been achieved (SEI 2018). Over time, however, the concern about outcome realization using the nexus approach can be addressed by populating the literature with success stories to buttress benefit claims. Also, it is suggested that the nexus approach can be improved by utilizing a more “nuanced methodological development”

and “by drawing from diverse knowledge bases and deeply engaging both stakeholders and decision-makers” (Albrecht et al. 2018). Hence, the nexus approach can be strengthened by drawing from promising approaches such as transdisciplinary, participatory, and social science approaches “to help align nexus research with policy needs and support its utilization in practice” (ibid.). Unfortunately, resource, time, and scope constraints limit the integration of other approaches in this research.

The Nexus Approach: An Analytical Tool

Essentially, the nexus approach is borne out of the need to “reconcile long-term and global objectives” on “climate protection, eco-system stewardship and equity goals,” where interlinkages, interdependencies, and interactions abound (Hoff 2011). As mentioned earlier, the nexus among the water, energy, and food sectors, for example, is seen as providing the way to integrate and improve sectoral management and governance approaches and structures. The nexus approach is also employed to provide more comprehensive information and to better understand complex interactions across sectors to maximize synergies, optimize resource sustainability, and promote policy coherence (SEI 2018). Moreover, the nexus approach is expected to widen the scope of analysis, clarify interlinkages, and achieve improved outcomes through (but not limited to) governance and institutional and policy reforms, especially where interdependence among sectors exists. Furthermore, it seeks to analyze these sectors “as a single system to promote resource sustainability and effective governance,” which, in turn, enhances consistency and coherence (ibid.). Accordingly, the nexus approach is flexible enough to function “as an analytical tool, a conceptual framework, or a discourse,” which interestingly is a source of both its strength and weakness (Albrecht et al. 2018; SEI 2018).



Forest Conservation and Energy Access: International Frameworks and Approaches

To understand the nexus between forest conservation and energy access in a broad sense, this part of the chapter canvasses and examines the various

international frameworks and approaches that establish the interrelationship and interdependence of forest conservation and energy access.

UN Framework Convention on Climate Change and the Paris Agreement

The 1992 UN Framework Convention on Climate Change (UNFCCC) sets the global objective to stabilize “greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system” (4). It also recognizes that energy consumption in developing countries will grow to achieve sustainable social and economic development alongside the need to control the global increase in greenhouse gas (GHG) emissions (3). One of the actions needed to achieve this is the conservation and enhancement of GHG sinks and reservoirs, including the important role of forests, as both a carbon sink and a source of GHG emissions. This is articulated in Article 4.1(d) of the UNFCCC (5), which serves as the legal foundation for the development of land-based mitigation rules and activities spanning land use, land-use change, and forestry (LULUCF); reducing emissions from deforestation and forest degradation in developing countries; the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries (REDD+); and joint mitigation and adaptation approaches (La Viña and de Leon 2017). Specifically, REDD+ refers to a framework that has been negotiated under the UNFCCC to facilitate intergovernmental cooperation on forests and climate change. Forests are vitally important for achieving the goals of the Paris Agreement, and the REDD+ framework is therefore recognized in Article 5 of the Paris Agreement.

Moreover, the 1997 Kyoto Protocol included provisions on LULUCF activities, albeit tropical forests in developing countries were excluded from LULUCF considering that these countries do not have any legally binding mitigation targets under the Kyoto Protocol (La Viña and de Leon 2018).

The Paris Agreement’s Article 5 builds on Article 4.1 (d) “and incorporates land-based mitigation and adaptation actions in a comprehensive way, zeroes in on the central role of forests, and creates opening for new approaches to such actions” (La Viña and de Leon 2017). This includes adopting an integrated management approach to land use and climate change to achieve interrelated and complementary objectives on forest conservation, energy access, and climate change mitigation. It also allows countries to undertake action “based on a holistic and multidimensional understanding of forests . . . placing equal or greater emphasis on social, environmental and governance aspects” (ibid.)—one that closely resonates in a nexus approach to forest conservation and energy access.

For purposes of complying with the Paris Agreement, the Philippines’ Intended Nationally Determined Contribution (INDC) seeks a 70 percent reduction of GHG emissions by 2030 from the business-as-usual scenario in energy, transport, forestry, industry, and waste sectors, albeit conditioned on the provision of the means of implementation that the country will receive in

the form of technical, capacity, and financial assistance. As the INDC indicates, energy and forestry are identified as key sectors in achieving national emission reduction and adaptation targets. The Philippine Climate Change Commission (CCC) created under RA No. 9729 as an independent, autonomous, policymaking and science-based body attached to the Office of the President is primarily tasked to coordinate, monitor, and evaluate programs and action plans of the Philippine government on climate change. The CCC is in the process of crafting and consolidating a Nationally Determined Contribution (NDC) that is supposed to be submitted to replace the INDC for purposes of complying with the 2015 Paris Agreement. It will be noted that pending submission of the NDC, the INDC's target of 70 percent reduction of GHG emissions by 2030 across sectors compared to a business-as-usual pathway, which according to experts is feasible (Verzola et al. 2017), will still stand (World Resources Institute n.d.). Undoubtedly, the Paris Agreement provides opportunities to achieve multiple objectives in the energy and forestry sectors to mitigate and adapt to climate change from a nexus perspective.



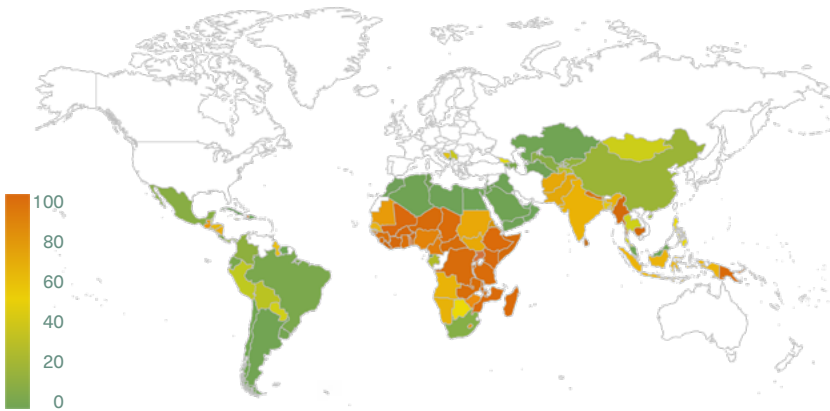
UN Sustainable Energy for All

Access to modern energy services is indispensable to providing basic needs, eradicating poverty, and meeting sustainable development goals. This is because access to modern energy services affects a variety of critical outcomes involving “productivity, health, education, safe water and communication services” (Gaye 2007), among others. Yet close to a billion people remain without access to electricity and 2.8 billion people are still using traditional biomass fuels—wood, charcoal, crop residues, and animal dung—for their cooking needs, with deleterious health consequences (IEA 2017). By providing energy access, the poor are especially given the opportunity to move up the “energy ladder”³ from traditional biomass fuels to modern energy and reap its positive developmental, environmental, and health effects.

While the existing literature is replete with research on the water, energy, and food nexus, the nexus between forest conservation and energy access remains largely understudied. According to FAO, there is ample evidence that the sustainable management of forests contributes to achieving the UN Sustainable Development Goals (SDGs), including but not limited to poverty alleviation, access to modern energy services, and climate change mitigation (2018). In addition, forests supply close to 40 percent of global renewable energy, with around 2.4 billion people or about 500 million households reliant on woodfuel to provide basic energy services such as cooking food and sterilizing water (FAO 2018; see Map 1). In most cases, woodfuel is deemed

“the most affordable and reliable energy source, particularly for low-income populations of developing countries and for people affected by natural disasters and humanitarian crises.” (FAO 2018).

The widespread use of woodfuel, however, raises serious health concerns that are attributed to indoor or household air pollution from low-efficiency and high-smoke-emission traditional stoves, the most common of which is the so-called “three-stone fire.” Annually, the World Health Organization (WHO) estimates that 4.3 million people die prematurely from household air pollution due to woodfuel burning (2016). Aside from this health crisis, the reliance on traditional biomass for cooking has spawned gender inequities associated with fuelwood gathering, with women and children carrying the heaviest burden and being the most exposed to risk (*ibid.*).



MAP 1. Global Percentage of Households Relying on Woodfuel for Cooking (FAO 2018)

To improve the fuel properties of wood, there is widespread practice to convert wood into charcoal to slow the burning process and lessen the smoke released during combustion. Notably, “population growth, urbanization in developing countries (with associated changes in housing and habits) and the difference in its relative affordability compared with alternative energy sources” have contributed to increasing global charcoal consumption by approximately 20 percent in the past 10 years and almost doubled in the last 20 years (FAO 2017). This means that moving up the energy ladder (i.e., fuel switching from charcoal to cleaner and more efficient technologies) is a standing challenge (Van der Kroon et al. 2013). Van der Kroon et al. assert that there is a need to transition to cleaner and more efficient energy technologies “to overcome the negative effects of traditional energy on human health and the environment and to enhance the livelihood conditions of the poor” (*ibid.*). For example, Goldemberg and Lucon point out that increasing the efficiency of fuelwood for cooking, like using the ceramic *jiko* stove in East Africa, can help address deforestation (2010).

Where the demand for charcoal is relatively high, for example in Southeast Asia, “charcoal production adds pressure on forest resources and contributes to forest degradation and deforestation, especially when forest access is unregulated” (FAO 2018). In effect, a policy environment that is dominated by “open access” undermines forest conservation. Also, it is observed that “most charcoal production in developing countries uses simple technologies with a conversion efficiency of only 10–22 percent, compared to over 30 percent using more advanced technologies” (FAO 2017). Accordingly, a clear nexus exists between forest conservation and energy access: improved access to clean energy technologies can enhance forest conservation efforts.

While woodfuel makes an important contribution to energy access, especially for many of the world’s poor and people in vulnerable situations, it is critical to take steps to avoid the negative impacts on forest resources and compromise the delivery of other SDGs (FAO 2018), including taking effective climate action. To illustrate, it is estimated that fuelwood and charcoal production annually emit 1–2.4 gigatons of CO₂ equivalent to the atmosphere, which represent 2–7 percent of global anthropogenic emissions (FAO 2017). In effect, there is a need to assess the interlinkages, interdependencies, and co-benefits between forest conservation and energy access to develop sound legal framework and policy coherence that enhance cross-sectoral coordination, identify and address common barriers, and facilitate attainment of shared goals. The nexus approach is, therefore, a useful analytical tool to explore how policymakers can better align forest conservation and energy access objectives and policies for integration and coherence.

As mentioned earlier, over 4 million annual premature deaths are attributable to household and indoor air pollution from using traditional biomass fuels, “and several billion hours are spent collecting firewood for cooking, mostly by women, that could be put to more productive uses.” (IEA 2017) To elaborate, out of 850 million people engaged in fuelwood collection and charcoal production, close to 83 percent are women (FAO 2018). Evidently, the lack of access to clean cooking facilities—measured based on indoor air quality, cookstove efficiency, convenience, safety, affordability, quality, and availability of the primary fuel, per the globally accepted Multi-Tier Framework for tracking energy access (SEFA et al. 2019)—results in the further marginalization of the most vulnerable members of society in many developing countries.

Unfortunately, the twin deficits of lack of access to electricity and clean cooking facilities add another significant dimension to poverty called “energy poverty,” which refers to the “inability to cook with modern cooking fuels and the lack of a bare minimum of electric lighting to read or for other household and productive activities at sunset” (Gaye 2007). In its expanded version, energy poverty encompasses “lack of access to resources, denial of opportunities and choices in energy that is adequate, safe, and reliable for economic and human development” (UNDP 2011). Thus, overcoming energy poverty is of paramount

global and national concern. Conserving the forests is one of the keys that can unlock the prison of energy poverty, “as vital sources of income, livelihoods and well-being for rural populations, particularly indigenous people, smallholders, and those living in close proximity to forests” (FAO 2018).



UN Sustainable Development Goals

The nexus between forest conservation and energy access is evident in the formulation of and achieving the SDGs, as the main global normative framework on environment and development until 2030 (Bastos Lima 2017). From recognised trade-offs, co-benefits and accepted coexistence, synergy between several policy domains can be progressed through common implementation frames, among others (Noordwijk 2018). The Energy Progress Report that globally tracks SDG 7, which calls for ensuring “access to affordable, reliable, sustainable and modern energy for all” by 2030, reveals that electricity access is up from 2017, with 89 percent of people around the globe already connected to some level of electricity (World Bank 2018). However, this translates to about 840 million people who still do not have access. Lagging furthest behind is access to clean cooking fuels and technologies, an area that has been typically overlooked by policymakers. This dimension of the energy access challenge has the strongest linkage to issues of forest conservation.

While wood has been used for millennia as fuel, particularly for heating and cooking (FAO 2011), the use of traditional cooking fuels and technologies among a large proportion of the world’s population, particularly in rural areas, has serious and widespread negative health, environmental, climate, and social impacts. Accordingly, the WWF Living Forests Report emphasizes that the challenges cannot be underestimated, and warns of approaches that are confused, fail to address leakage and especially impacts to other ecosystems, and create perverse incentives that inadvertently cause an unwanted result (2011).

Relevantly, SDG 13 articulates the need to take urgent action to combat climate change and “recognizes climate change as a wicked challenge that needs to be addressed in order to ensure sustainable development” (Vasseur et al. 2017). This goal is intricately linked to the UNFCCC and the Paris Agreement, which require the support of all countries due to the global scale and graveness of the problem. Tackling climate change as a sustainable development goal will require novel approaches based on the recognition that human, social, and natural systems are intricately interconnected (Cote and Nightingale 2012) and “to overcome the current challenges,

one must understand how to connect top-down national policies to . . . bottom-up development strategies” (Vasseur and Jones 2015). This requires acting locally and finding ways to encourage dialogue within and among government agencies, different levels of government (national-local), and other communities and stakeholders to come up with solutions relevant to their needs and conditions (Vasseur et al. 2017).

In addition, SDG 15 highlights, among others, the importance of managing the forests sustainably to achieve the SDGs, which include targets on eradicating poverty (SDG 1), access to sustainable energy (SDG 7) and climate action (SDG 13). Pertinently, the 2017 UN Strategic Plan for Forests incorporates specific associated targets such as coherent, coordinated, and complementary national and subnational forest-related policies and programs that engage relevant stakeholders. Moreover, the 2016 UN Forest Instrument articulates the need to strengthen legal and policy frameworks to enhance the contribution of forests to the attainment of the internationally agreed development goals, including the SDGs, particularly with respect to poverty eradication and environmental sustainability. Pertinently, a detailed study on the nexus between forest and poverty reveals that the poor draws close to 22 percent of their income from the forest (Rawlins et al. 2017).

Therefore, looking into interrelationships and interlinkages across sectors such as forestry and energy will enhance coherence, coordination, and complementarity of policies, programs, and implementation. As the Global Network on Energy for Sustainable Development (GNESD-UNEP) study emphasizes, “creative inter-linkages would ensure that the existing opportunities and infrastructure are tapped” to maximize co-benefits in the forest and energy sectors (2011). These interlinkages are echoed well in a nexus approach to forest conservation and energy access.



Philippine Institutional, Legal, and Policy Framework: Issues and Concerns

While a close link and interdependency between forest conservation and energy access clearly exists in achieving the SDGs and global climate change objectives, there has been a lack of effective legal and policy frameworks that are in place to

promote forest conservation and energy access in conjunction with one another. This is largely attributable to a historically fragmented approach, wherein legislation and policies are developed along sectoral lines and institutional mandates, effectively isolating otherwise interconnected sectors into silos.

Institutional, Legal, and Policy Framework for Forest Conservation

The forest has been treated as a separate natural resource sector in the Philippines since a Bureau of Forestry was created under the Department of Interior at the beginning of the American colonial period. From that time on until the new millennium, or for over a century, the same institutional setup of a forestry bureau under a national government agency is mirrored at various periods in history. The latest iteration of this institutional approach is reflected in Executive Order (EO) No. 192, s. 1987, which created the Department of Environment and Natural Resources (DENR) as the primary government agency responsible for the conservation, management, development, and proper use of the country's environment and natural resources such as forests and grazing lands. For purposes of accomplishing its mandate and as basis for policy formulation, the DENR is guided by the following objectives:

- (a) Assure the availability and sustainability of the country's natural resources through judicious use and systematic restoration or replacement, whenever possible;
- (b) Increase the productivity of natural resources in order to meet the demands for forest, mineral, and land resources of a growing population;
- (c) Enhance the contribution of natural resources for achieving national economic and social development;
- (d) Promote equitable access to natural resources by the different sectors of the population; and
- (e) Conserve specific terrestrial and marine areas representative of the Philippine natural and cultural heritage for present and future generations. (Section 4)

In addition, the DENR has the power, among others, to issue rules, policies, and regulations that encourage greater people participation and private initiative in natural resource management; harness forest resources in a sustainable manner; and assist rural development, including formulating an integrated, multisectoral, and multidisciplinary National Conservation Strategy or NCS (Section 5).

Under EO No. 192, the Forest Management Bureau (FMB) was also established as a staff sectoral bureau of the DENR with the primary responsibility of providing advice to the DENR Secretary "on matters pertaining to forest development and conservation" (Section 13). In particular, the FMB recommends policies and/or programs for the effective protection, development, occupancy, management, and conservation of forest lands

and watershed, among others. Through the FMB and its regional offices, the DENR implements PD No. 705, which remains as the main law governing the protection, development, management, regeneration, and reforestation of forest lands. This includes licensing and permitting for purposes of utilizing, exploiting, occupying, possessing, or conducting any activity within any forest land. The policy objectives of PD No. 705 include: (a) The multiple uses of forest lands shall be oriented to the development and progress requirements of the country, the advancement of science and technology, and the public welfare; b) Land classification and survey shall be systematized and hastened; c) The establishment of wood-processing plants shall be encouraged and rationalized; and d) The protection, development, and rehabilitation of forest lands shall be emphasized so as to ensure their continuity in productive condition (Section 2). While there have been several legislative attempts for the much-needed update to PD No. 705 (e.g., the proposed Sustainable Forest Management Bill in Congress) since the 1990s, this law has been serving as the country's primary legal and policy framework for forest development and conservation for the last 45 years.

In 1995, EO No. 263 was issued adopting Community-Based Forest Management (CBFM) as the national strategy for sustainable forestry and social justice with the DENR as the lead public agency. To implement EO No. 263, DENR Administrative Order No. 2004-29 provides the details of the CBFM concept, principles, process, and strategy, which is defined as one that aims to “improve the well-being of forest-dependent communities, and at the same time ensure the sustainable management, rehabilitation, and protection of the forestlands and the resources therein, through the active participation of different stakeholders.” The CBFM strategy also provides a policy mechanism to recognize resource access and use rights through the issuance of long-term tenurial instruments, particularly the Community-Based Forest Management Agreement (CBFMA). Moreover, it assists participants to access investment capital and enhance market linkages (Aquino and Daquio 2014). However, CBFMA, as a tenure instrument, cannot be used as collateral to access bank financing for tree farm, agroforestry, or industrial tree plantations. Notably, the CBFMA's dominant objective remains tilted toward forest production, as seen in the Philippine Master Plan for Climate Resilient Forestry Development (PMPCRFD) (FMB–DENR 2016).

In 2004, EO No. 318 was issued promoting sustainable forest management in the Philippines. It declares as a matter of policy that watershed-based integrated ecosystems “shall be managed in a holistic, scientific, rights-based, technology-based and community-based manner and observing the principles of multiple-use, decentralization and devolution, and active participation of local government units (LGUs), synergism of economic, ecological, social and cultural objectives, and the rational utilization of all resources found therein” (Section 1). Among the guiding principles adopted include a holistic, sustainable, and integrated development of forestry resources; community-based forest

management as primary strategy in all forest conservation and development and related activities; and principles and practices of good governance such as transparency, accountability, and participatory decision-making in transactions, decisions, and actions affecting forestry, including partnerships and collaboration among different national government agencies, the local governments, local communities, and other stakeholders (Section 2).

The country updated its PMPCRFD in 2016, which was adopted in 2019 through the issuance of DENR Department Administrative Order (DAO) No. 2019-06. The PMPCRFD enunciates the need to climate-proof forestry development in the country considering: (a) the Philippine commitments under the UNFCCC; (b) the increasing global concern on the impacts of climate change to ecosystems and communities; (c) the call to integrate climate change adaptation in all programs and policies; and (d) the increasing recognition of the role of forests as providers of ecosystem goods and services, such as being a source of sustainable energy. Interestingly, one of the key strategic objectives enunciated in the PMPCRFD is the development and maintenance of 297,234 hectares of bioenergy and fuelwood plantations to support the National Renewable Energy Program, although the latter is focused more on power generation rather than energy access at the household level. Unfortunately, there is no express, specific reference to energy access in any of the laws and policies in the forestry sector, including in any programs on forest conservation, despite findings that it is a contributing factor to continued deforestation (Rawlins et al. 2017). Furthermore, there is neither one that precludes energy access, specifically the provision of clean cooking facilities; nor as part of the NCS or CBFM, especially if interlinked with forest conservation initiatives.

The sectoral approach in forestry has long been embedded and perpetuated in the institutional setup, but international and national commitments on sustainable development and climate action are driving legal and policy measures in the country to be more holistic, integrated, and consistent across the field—one that resonates in a nexus approach. This is evident in the forest policies and plans being issued in recent years incorporating climate resiliency and sustainable forest management principles that recognize the multifaceted role of the forest in providing ecosystem goods and services such as sustainable energy, among others.

To achieve the SDGs and global climate change goals, forest conservation and energy access policies must be interlinked and aligned to optimize the synergy and complementarity of such initiatives in attaining said goals. Clearly, an opportunity exists to incorporate access to clean cooking facilities into forest conservation policy instruments such as the NCS and the CBFM as a component of sustainable forestry and social justice, while contributing to the attainment of the SDGs and international climate change goals at the same time. To exemplify, an integrated, multisectoral and multidisciplinary NCS articulates a nexus approach that can serve as a platform to enhance policy coherence between forest conservation and energy access. Moreover, the

DENR has the broad powers to entertain co-implementation arrangements with the Department of Energy and other agencies through joint policy issuances to promote both forest conservation and energy access.



Institutional, Legal, and Policy Framework for Energy Access

On the other hand, energy access, particularly through electrification or the provision of electricity services,⁴ falls within the remit of the Department of Energy (DOE). This mandate flows from Republic Act (RA) No. 7638 of 1992, which designated the DOE as the lead government agency tasked to “prepare, integrate, coordinate, supervise, and control all plans, programs, projects, and activities of the Government relative to energy exploration, development, utilization, distribution, and conservation.” The DOE functions include, but are not limited to: (a) Formulating “policies for the planning and implementation of a comprehensive program for the efficient supply and economical use of energy consistent with the approved national economic plan and with the policies on environmental protection and conservation and maintenance of ecological balance, and provide a mechanism for the integration, rationalization, and coordination of the various energy programs of the Government”; and (b) “Developing and updating the existing Philippine energy program which shall provide for an integrated and comprehensive exploration, development, utilization, distribution and conservation of energy resources, with preferential bias for environment-friendly, indigenous, and low-cost sources of energy” (Section 5).

Prior to the DOE Act, there is a very brief period when forestry and energy sector concerns were merged in a single institution. Under EO No. 131 s. 1987, a Department of Environment, Energy and Natural Resources was created integrating energy and natural resources functions under a single government agency. However, this was short-lived and eventually scrapped in favor of establishing an Office of Energy Affairs (OEA) per EO No. 193 s. 1987. The DOE succeeded the OEA and was also given the power to supervise the Philippine National Oil Company (resource development), National Power Corporation or NPC (power generation, transmission, and distribution) and the National Electrification Administration (regulation of electric cooperatives and rural electrification), as attached agencies and corporations. It will be noted that the institutional setup has an energy sector focus. Moreover, it provides the DOE with the opportunity to closely coordinate and supervise key public agencies involved in developing and implementing national policies and programs for the energy and electric power sector in an integrated, cohesive, and consistent manner.

RA No. 9136 or the Electric Power Industry Reform Act (EPIRA) of 2001 expanded the original mandate of the DoE not only to oversee the restructuring of the electric power industry, but also to undertake the formulation of policies toward “efficient supply and economical use of energy consistent . . . with the policies on environmental protection and conservation and maintenance of ecological balance.” An important EPIRA reform provision relevant to energy access, particularly electricity access, is the entry of qualified third parties into remote and unviable villages to provide electric service or participate in rural electrification, if a franchised utility is unable to do so for whatever reasons (Section 59).⁵ Missionary electrification or the delivery of basic electricity service to unviable areas remains a service domain of the NPC-Small Power Utilities Group (NPC-SPUG), in order to provide power and associated power delivery systems in areas that are not connected to the main transmission grid and cannot be serviced by distribution utilities or qualified third parties. NPC-SPUG generates power using diesel and bunker-fuelled generators (i.e., carbon-emission intensive), and notably admits that small islands and isolated grids are expensive to operate and maintain despite being heavily subsidized (Ahmed 2018).

The DOE essentially anchors its rural electrification programs on the DOE Act through Energy Regulation (ER) No. 1-94, Section 59 of the EPIRA, and other related administrative issuances such as Department Circular No. DC2006-04-0003 that created the Expanded Rural Electrification Program Team spearheaded by the DoE, together with its attached agencies and corporations and other line agencies. Under ER No. 1-94, power generators and/or energy resource developers are required to set aside one centavo per kilowatt-hour of the total electricity as financial benefits to host communities for electrification, development and livelihood, reforestation, watershed management, and health and/or environment enhancement. As mentioned earlier, Section 59 of the EPIRA opened opportunities for private sector participation and investment in the government’s rural electrification activities through the qualified third-party scheme. While rural electrification policies and programs abound through both public and private sector schemes, there is none when it comes to access to clean cooking facilities. Therefore, only the electricity access dimension is being addressed and access to clean cooking facilities remains to a large extent overlooked.

In 2016, it was noted that 61 million Filipinos still relied primarily on traditional use of biomass for cooking, as in 2015 (IEA 2017; See Table 1). Between 1992 to 2001, estimated average per capita consumption of fuelwood and charcoal in the Philippines ranged from 373 to 1,300 kg per capita per year in rural areas, and about 140 to about 700 kg per capita per year in urban areas (Remedio 2005). Over the years, fuelwood and charcoal consumption “has been notably highest in the household sector” compared to industrial end use (Remedio 2005, 137). However, there is a need to generate current data.

TABLE 1. Access to Modern Energy Services in Southeast Asia

ASEAN MEMBER COUNTRY	POPULATION WITHOUT ACCESS TO ELECTRICITY (2016)		POPULATION PRIMARILY RELYING ON TRADITIONAL USE OF BIOMASS (2015)	
	MILLION	SHARE (%)	MILLION	SHARE (%)
Brunei Darussalam	–	–	–	–
Cambodia	6	40%	13	83%
Indonesia	23	9%	67	26%
Lao PDR	<1	9%	7	96%
Malaysia	<1	1%	–	–
Myanmar	22	41%	51	94%
Philippines	11	10%	61	60%
Singapore	–	–	–	–
Thailand	–	–	18	26%
Vietnam	2	2%	36	39%
Total	65	10%	252	40%

Source: Data from IEA (2017)

It is also reported that woodfuel in the Philippines is mostly sourced from forest lands, protected areas, and mangroves, particularly brushlands and secondary forests, even though harvesting of fuelwood in natural forests is already prohibited (FMB–DENR 2016). To achieve climate resiliency, on the other hand, forestlands are largely expected to remain as major carbon sinks in the Anthropocene (ASOG and SSG Advisors 2016).

Where electrification strategies involve “microgrids and in combination with batteries, however, electricity may become an option for some cooking tasks, especially where rice is a food staple and efficient electric rice cookers can be used” (IRENA, OECD/IEA, and REN 21 2018). Distributed energy systems such as those sourced from renewables like biomass have been found to be ideal for remote, last mile, off-grid electrification, particularly of highly dispersed rural areas. For this purpose, RA No. 9513 or the Renewable Energy Act of 2008 (REA) is relevant in promoting the use of renewable energy technologies. Specifically, the REA declares the following as policy objectives:

- (a) Accelerate the exploration and development of renewable energy resources such as, but not limited to, biomass, solar, wind, hydro,

geothermal and ocean energy sources, including hybrid systems, to achieve energy self-reliance, through the adoption of sustainable energy development strategies to reduce the country's dependence on fossil fuels and thereby minimize the country's exposure to price fluctuations in the international markets, the effects of which spiral down to almost all sectors of the economy;

- (b) Increase the utilization of renewable energy by institutionalizing the development of national and local capabilities in the use of renewable energy systems, and promoting its efficient and cost-effective commercial application by providing fiscal and non-fiscal incentives;
- (c) Encourage the development and utilization of renewable energy resources as tools to effectively prevent or reduce harmful emissions and thereby balance the goals of economic growth and development with the protection of health and the environment; and
- (d) Establish the necessary infrastructure and mechanism to carry out the mandates specified in the RE Law and other existing laws (Section 2).

However, the REA mainly focuses on power generation and electricity access rather than access to clean cooking facilities, albeit providing fiscal incentives for renewable energy non-power applications such as fuel for cooking and renewable energy development in off-grid areas. It is not surprising that the DOE acknowledges explicitly that electrification is part of the energy sector agenda, but not necessarily including access to clean cooking facilities (DOE 2017). Although the DOE has neither considered forest conservation to be within its institutional domain nor as part of its mandate, the combined policy objectives of the DOE Act, EPIRA, and REA are broad enough to be construed as supportive of both the electricity and clean cooking facilities access dimensions, including achieving the SDGs and global climate change goals where forest conservation plays a major role. For example, access to clean cooking facilities can be reframed as part of the DOE's energy program that promotes environmental protection, forest conservation, and reduction of GHG emissions at the same time. Such a reframing is reasonable considering that the SDGs and climate-related policies dealing with the impacts of climate change strongly affect all nexus sectors such as forestry and energy. Finally, it is worth mentioning that "integration" has been a key functional mandate that the DOE is enjoined to pursue, which opens the window for policy coherence between forest conservation and energy access. Similar to the DENR, the DOE has the latitude to execute joint policy issuances and co-implementation arrangements with the former to achieve both forest conservation and energy access imperatives.



The Palawan Approach

In 1992, RA No. 7611 or the Strategic Environmental Plan for Palawan (SEP) Act of 1992 (SEP Law) was enacted as a special law establishing a comprehensive framework for the sustainable development of Palawan that is compatible with protecting and enhancing the natural resources and endangered environment of the province. The SEP also serves as a guide to Palawan's local government and other concerned government agencies in the formulation and implementation of plans, programs, and projects affecting the province.

An interesting feature of the SEP is its underpinning philosophy that is grounded on ecological viability, social acceptability, and an integrated approach. First, *ecological viability* refers to the physical and biological cycles that maintain the productivity of natural ecosystems, which must always be kept intact. Second, *social acceptability* means that the people themselves, through a participatory process, are fully committed to support sustainable development activities by fostering equity in access to resources and the benefits derived from them. Third, an *integrated approach* is fostered that allows for a holistic view of problems and issues occurring in the environment, as well as opportunities for coordination and sharing that will eventually provide the resources and political will to implement and sustain SEP activities. This third feature echoes a strong a nexus approach.

Furthermore, the governance setup is well suited to interagency, public-private sector, and national-local government coordination through the Palawan Council for Sustainable Development (PCSD), which is under the Office of the President and consists of members of Congress from Palawan and representatives from the National Economic and Development Authority, the DENR, the Department of Agriculture, the Governor of Palawan, the Mayor of Puerto Princesa City, the President of the Mayor's League of Palawan, the President of the Provincial Chapter of the *Liga ng mga Barangay*, the Executive Director of the PCSD, and other members from the public or private sectors. This makes Palawan unique when it comes to legal and policy framework.

The SEP Law provides an interesting nexus model wherein interagency, national-local government, and multisectoral coordination and collaboration are built into the formulation and implementation of policies, plans, programs, and projects affecting Palawan. This means that the opportunity to link forest conservation and energy access objectives into a single, coherent policy can be realized by utilizing the Palawan SEP governance model. While the PCSD administers the implementation of the SEP Law, it essentially relies on coordination with other line agencies of the national government to enforce policies and regulations.

On the other hand, the SEP Law applies especially to the Province of Palawan and is not necessarily replicable anywhere else. This limits the scope of forest conservation and energy access policies and programs within Palawan. If replicated, it will take national legislation to be enacted to cover other parts of the Philippines, which involve a rigorous and cumbersome legislative process. However, as pointed out earlier, the SEP Law offers an opportunity to adopt an integrated and coherent approach to forest conservation and energy access within Palawan, particularly on access to clean cooking facilities, which considers the institutional, environmental, and social dimensions into the policy equation and program implementation.

Health as a Missing Link

While there is a focus on forest conservation and energy access policy nexus in this chapter, it will not be remiss to highlight the gap related to the health impacts of the lack of access to clean cooking facilities and technologies. At the international level, WHO monitors the progress of expanding access to clean household energy for cooking as a global health problem. As articulated in EO No. 292, s. 1987 and EO No. 102, s. 1999, the Department of Health (DOH) is the lead public health agency in the Philippines and acts as a stakeholder, policy body, and regulator in the health sector. However, the DOH and the Philippine government as a whole do not have any policy or program on access to clean cooking facilities to address the health problem associated with the use of traditional biomass for cooking. Alarming, as SEFA et al. note, “the Philippines does not have any clean cooking policy in place” (2019), and neither is there a national target nor an identified institutional and regulatory entity tasked to generate such a policy. Therefore, it is a troubling policy gap in the Philippines that must be filled considering the magnitude and complexity of the challenge.



Conclusion and Moving Forward

Considering the significant degree of interlinkage between forest conservation and energy access, particularly access to clean cooking facilities, in terms of achieving the SDGs and global climate change goals,

policymakers should alternatively focus on taking a more comprehensive and integrated approach to the effective management and implementation of both. This would require policymakers to consider innovative policies and approaches that enhance alignment, interaction, co-benefit, and joint implementation of forest conservation and energy access as part of a single system, per the nexus approach. By bringing together institutions, for example, involved in different sectors, “nexus approaches can promote cooperation, coordination and policy coherence” (Liu et al. 2018).

This chapter has been exploratory, primarily in terms of employing the nexus approach to investigate the gaps and opportunities for policy integration and coherence insofar as forest conservation and energy access in the Philippines are concerned. As a result of the nexus analysis, it is revealed that the current institutional, legal, and policy framework in the country is designed along sectoral lines that situates forest conservation and energy access in silos. While this is historically the case, international and national development commitments and trends as exemplified by the SDGs and global climate change goals are driving policies to be more integrated and coherent across sectors to attain common or shared objectives (FMB–DENR 2016). A significant policy gap has also been identified, considering that there is no existing national and local policy in the Philippines addressing the lack of access to clean cooking facilities and technologies as an important component to achieve the SDGs and global climate change goals, especially in view of the negative health impacts of the continued use of traditional biomass such as fuelwood and charcoal for cooking.

Moving forward, the nexus approach highlights the need for policy integration and coherence to fill gaps and redouble efforts to enhance energy access, particularly in rural areas, while achieving forest conservation at the same time in the Philippines. However, this is easier said than done. As it is, allocating the significant costs associated with building the required infrastructure and supply chain to serve the more rural, remote, and less-populated areas will be complex and difficult. Overcoming the challenge of providing access to clean cooking facilities will likewise require significant investments. It is projected that USD 523 million in finance will be required, of which USD 220 million will be utilized to address the affordability gap (SEFA et al. 2019).

As mentioned earlier, there is a need to overcome the legislative inertia and update PD No. 705 for the sustainable management of the country’s forest in line with sustainable development and climate change goals. Pending this, the CBFM as an existing policy instrument articulates core objectives to deliver sustainable forestry and social justice. Considering that fuelwood and charcoal use continue to pose concerns in sustainably managing the forest, CBFM inherently carries features for integrating forest conservation and energy access objectives. To illustrate, planting the right fuelwood species in a CBFM area provides a sustainable source for woodfuel and charcoal to

address, among others, the wood gathering and collection burden that women and children bear. Incorporating a component to provide clean cooking facilities and technologies, such as more fuel efficient and eco-friendly stoves that are locally available and proven to reduce GHG emissions and household air pollution, will also enhance forest conservation efforts.

Moreover, this strategy can evolve into a transition approach to fuel-switching and moving up the energy ladder, although recent research points to “fuel stacking” as the likely reality of how households use energy at home (WHO, 2016). While the DENR remains as the lead implementing agency for the CBFM, other government agencies such as the DOE and DOH are suitable partners for an enhanced CBFM program with cross-sectoral and socioeconomic components that achieve energy access and health targets in conjunction with forest conservation objectives. Pertinently, a redesign of an enhanced CBFM policy will benefit from participatory processes through adequate consultation and analysis of environmental, social, and economic impacts in the context of specific national and local conditions.

Furthermore, the National Conservation Strategy or NCS presents an opportunity for policy integration and coherence considering the multisectoral and multidisciplinary approach to its formulation. Although the DENR is the main government agency tasked to formulate the NCS, it offers several opportunities for participation, consultation, and contribution from other government entities and sectors. There is currently no consolidated NCS that has the potential to overcome policymaking in silos and incorporate forest conservation and energy access, as key components, together. It is timely to revisit this institutional deliverable under EO No. 192.



From an electrification standpoint, the Philippines has active and ongoing programs for last mile rural electrification with support from multilateral and bilateral development partners, including through public, private, and public-private sector schemes. To achieve the country’s total electrification target, off-grid households in remote areas must be reached. Due to the geographic and highly dispersed nature of these households, stand-alone distributed energy systems and mini-grids are being considered as viable and cost-effective solutions for off-grid electrification for the remaining 11 million Filipinos still without electricity. By exploring thematic synergies and complementarities on forest conservation, energy access (clean cooking technologies), and health to attain the SDGs and global climate change goals, rural electrification approaches can incorporate strategies on forest conservation, introduce clean cooking technologies, and address household

air pollution as deliverable components. This will entail close interagency coordination and collaboration among the DOE, DENR, and DOH, as well as their respective development partners, including pooling resources and putting in place administrative arrangements for the interagency partnership.

Lastly, the Nationally Determined Contribution (NDC) calls for inputs from the energy and forest sectors to deliver on the commitments under the UNFCCC and the Paris Agreement. These include mitigation and adaptation targets to limit global warming to under 2°C, as provided in the Paris Agreement. While the existing Philippine INDC of 70 percent GHG reduction by 2030 from the business-as-usual scenario is conditional, it is a feasible target in which forest conservation and energy access can contribute together, as interlinked sectors. However, the current policies that are in place do not meet the target articulated in the INDC, though it is still undergoing revision for purposes of the NDC (Climate Action Tracker n.d.). Therefore, the NDC has the potential to explore the linkage between forest and energy deeper to deliver a Paris Agreement-compliant country instrument.



Future Research Directions

The nexus issues on forest conservation and energy access are multidimensional, complex, and extensive. This means that opportunities to extend the research abound. To reiterate, this chapter is essentially exploratory and examines the Philippine institutional, legal, and policy framework on forest conservation and energy access for integration and coherence based on a novel approach. However, the study recognises that it can cover only so much and acknowledges the limited time and data available to delve deeper into the nexus between forest conservation and energy access in the Philippines. For this purpose, a couple of future research directions emerge initially.

In view of the gender and equity dimension of the issue on lack of access to clean cooking facilities and technologies vis-à-vis forest conservation, there is a need to generate data to support an empirical and evidence-based approach to crafting relevant and appropriate policies for forest conservation and energy access in the Philippines. Notably, forest conservation and energy access are relatively

site-specific, and the context varies from one landscape to another. Bearing in mind the Forest Foundation's focal landscapes in Palawan, Sierra Madre, Samar and Leyte, and Bukidnon and Misamis Oriental, site-specific studies on gender, demographics, and household energy consumption are encouraged in these areas.

Along this line, accounting for GHG emissions and reductions from forest conservation and energy access, particularly net emissions from woodfuel, remain unknown if the contribution to climate change mitigation is to be quantified. This is important in determining the baseline and progress if mitigation targets in forest conservation and energy access are to be jointly set, measured, monitored, and evaluated. To better understand this aspect, a study to establish an emission and reduction profile for the focal landscapes relevant to forest conservation and energy access is recommended, which can also inform emerging REDD+ initiatives on climate change mitigation.

To emphasize, the proposed nexus approach to forest conservation and energy access is a novelty and does not purport to hold the answer to every question that may arise regarding the matter. For this reason, the ideas and propositions presented in the chapter would undeniably be enriched and refined by extending the research, especially into those areas where the literature remains absent or limited.

Final Reflection

The options and pathways identified above are meant to trigger continuing conversations on the issue of energy access, particularly the lack of access to clean cooking facilities and technologies, as it relates to forest conservation. The scope, however, can easily extend beyond forest conservation and energy access considering broader long-term sustainable development and climate change goals. By having those conversations, designing relevant and appropriate policies can benefit from a nexus approach in tackling the forest conservation and energy access challenge in the Philippines, as integrated and coherent rather than separate sectoral and institutional concerns.

Notes

1. The International Energy Agency defines energy access as “a household having reliable and affordable access to both clean cooking facilities and to electricity, which is enough to supply a basic bundle of energy services initially, and then an increasing level of electricity over time to reach the regional average.” From this definition, there are two elements of energy access at the household level: electricity access and access to clean cooking facilities. Electricity access entails a household having initial access to sufficient electricity to power a basic bundle of energy services—at a minimum, several lightbulbs, phone charging, a radio, and potentially a fan or television—with the level of service capable of growing over time. On the other hand, access to clean cooking facilities means access to (and primary use of) modern fuels and technologies, including natural gas, liquefied petroleum gas (LPG), electricity, and biogas, or improved biomass cookstoves (ICS) that have considerably lower emissions and higher efficiencies than traditional three-stone fires for cooking (IEA 2020).
2. *Cambridge Advanced Learner's Dictionary and Thesaurus*, s.v. “nexus (n.),” <https://dictionary.cambridge.org/dictionary/english/nexus>.
3. The energy ladder refers to the phenomenon of households and firms—and so, in aggregate, countries—shifting from low-efficiency fuels to high-efficiency ones as income per capita increases (World Bank 2008).
4. According to IRENA (2017), the concept of electrification is two-fold: (a) providing the infrastructure (i.e., line extension, that would allow potential consumers to gain access to the source of electricity); and (b) actual delivery of electricity to households.
5. “Unviable areas” refer to a geographical area within the Franchise Area of a Distribution Utility where immediate extension of distribution line is not feasible.

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