



FOREST CONSERVATION IN
THE PHILIPPINES:

Linking People, Forests, and Policies

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Abstract

As Earth progresses into a new geologic epoch called the Anthropocene, the Philippine forestry sector faces greater challenges as deforestation and forest degradation become more apparent. Severe and irreversible impacts from human-induced activities have ushered the country into this new epoch, shaped by colonization, industrialization, modernization, commoditization, and various laws and policies throughout history. Delving deeply into these issues shows the progression of human-environment relations from a once-mutual connection to an anthropocentric relationship that accelerates forest loss. To save the remaining forests, the country has leveraged its resources through the enactment of Executive Order No. 263, which declared the Community-Based Forest Management (CBFM) Program as the national strategy for sustainable upland development. After decades of implementation, the program has reaped various successes. However, numerous entanglements with issues on weak accountability structure, poor community participation and transparency in decision-making, bureaucratic apathy, and corruption have thwarted most of its intended benefits. These concerns further intersect with contemporary problems on environment, socioeconomic, health, and policy sectors—way beyond the forestry sector. In light of this, the call for an integrated approach to harmonize all efforts from various sectors at different levels through responsive policies and programs anchored on good governance principles is imperative to incur positive and beneficial changes to these contemporary issues. This chapter provides an overview of the intricate relationship among people, forests, and policies viewed through the lenses of social, political, economic, and cultural influences in the Anthropocene.

Introduction

Flourishing biodiversity and a high level of endemism in flora and fauna are evident products of the archipelagic nature, complex biogeographic pattern, and well-suited tropical climate of the Philippines (Jones and Kennedy 2008). Various ecosystems possess a unique set of taxa essential for the support of different life forms. The synergy between human ingenuity and abundant natural resources has been evolving since the Neolithic Age¹, as reflected in the emergence of agriculture (Peralta and NCCA 2000). As the centuries progressed, humans learned to effectively manipulate their environment to their advantage. However, most of these changes turned out to be more pervasive and profound, thus affecting the Earth's major biogeochemical cycles (Lewis and Maslin 2015; Malhi 2017; Steffen, Crutzen, and McNeill 2007). The magnitude, variety, and longevity of human-induced activities in the past created significant changes which went beyond the range of variability defined by the Holocene.² This caused the Earth to progress into a new geological epoch dominated by man, which is called the Anthropocene (Lewis and Maslin 2015; Malhi 2017; Steffen et al. 2011).

The Anthropocene is the product of profound and pervasive anthropogenic driving forces that have been occurring and evolving since the previous century. These driving forces are built upon individual decisions strongly tied to institutional, political, economic, and cultural factors conditioned by broad historical trends and global processes that directly or indirectly aggravated the environment (Rosa et al. 2015). Fossil fuel exploitation, forest resource extraction, land conversion, and carbon emission are some of the driving forces that became prevalent in pursuit of the insatiable demands of the burgeoning population. The consequences of these past actions are not confined within spatiotemporal limitations but transcend national boundaries and age, causing global peril to the current and future generations as they reap the long-term impacts of these actions (Malhi et al. 2014; Steffen et al. 2011).

From the context of developing countries, the apparent manifestations of the Anthropocene are the modifications that humans made to their environment (Malhi et al. 2014). For instance, most of the lush green forests of the Philippines disappeared and were replaced by a landscape of sloping rice and corn fields, numerous coconut trees, crowded houses, compacted and cemented roads, populated villages, and sparse emerging trees. The country has significantly lost vast tracts of its densely canopied tropical forest, with 21 million hectares of forestland in 1900 dwindling to around 7 million hectares at present (Lasco and Pulhin 2000). Physical alterations brought by deforestation and forest degradation seem to be the strong proof of the Anthropocene, yet the greater concern for this new epoch are the prevailing forces that govern these destructions.

This chapter provides an overview of the intricate relationship among people, forests, and policies in the country's complex history of deforestation

and forest degradation viewed through the lenses of social, political, economic, and cultural influences. It then examines how these influences, in return, left an indelible impact on the citizens of the Philippines, its forests, and its policies by magnifying some key concepts. Lastly, the chapter chronicles the emergence of forest conservation and community forestry, including the reflections from the country's implementation of the Community-Based Forest Management (CBFM) Program in the Anthropocene.



Traversing the Path of the Anthropocene: A History of Forest Destruction and Degradation

The Anthropocene as an epoch is a recent concept, yet its existence has long been felt and recognized. Increasing global temperature, unprecedented climate change, and natural disasters are few indications of an age that is different from the previous one. These changes are the by-products of the individual and collective decisions and actions in the past that have now shaped the current world. A retrospection of Philippine history reveals how the Anthropocene has been deeply hemmed by various forces resulting in contemporary problems. Behind the country's history of colonization lies the dreadful narrative of forest destruction and degradation. Delving into these realities reveals more than the physical alterations, but the sudden transformation of the human-environment interaction. From mutual connection to an anthropocentric relationship, indeed, colonization of the land has also led to the colonization of minds. With global pressures on industrialization, modernization, and commoditization, the path leading to the Anthropocene, for developing countries such as the Philippines, is inevitable.

Antiquity:³ Nature and the Early Man

Earliest human accounts precisely portrayed a mutual connection between humans and their environment. As early as the Neolithic Age, indigenous peoples (IPs) across the country learned to improve and manage their environment in a manner consistent with its natural processes (NCCA 2000; Camacho et al. 2016). Sustainability of natural regeneration capacity and environmental protection were the principles that governed their resource

extraction. The culture of the IPs reflected the deep connections and high regard they had for nature. Evidently, conservation and protection of the environment were ingrained in their hearts and minds with the desire to maintain their harmony with nature (Camacho et al. 2016; ILO 1995).

For instance, the culture of the Ifugao, an indigenous community that inhabits the mountainous part of Northern Luzon, was harmoniously knit with the rugged ecosystem on which their major livelihoods depended. Perfectly carved terraces, known as *payoh*, manifested their commendable indigenous knowledge. Although these terraces greatly altered the mountains, their design was recognized worldwide as one of the most productive, stable, and sustainable farming systems. Payoh, together with *muyong* or *pinugo* (woodlot) and *uma* (swidden), comprised the holistic farming approach of the Ifugao. Payoh were primarily constructed to maximize the use of available water resources for rice cultivation. It was designed to provide continuous water supply and prevent waterlogging of the cultivated rice. The intricacies of the construction, utilization, and maintenance of the terraces were products of their understanding and close association with nature. In choosing the rice varieties, the Ifugao considered those that could adapt with the season and soil nutrient capacity of their payoh.

After sowing the rice in payoh, the Ifugao would cultivate their uma with annual crops such as *kamote* (sweet potato), beans, corn, *gabi* (taro), roots and tubers (yam, cassava), squash, and other leafy vegetables together with perennial crops like banana. Aside from *kaingin* (swidden farming or slash-and-burn),⁴ the Ifugao also employed a fallow period of five to six years to replenish the soil fertility in their uma (Camacho et al. 2016; ILO 1995). They also used *muyong* typically located at the headwaters. The plot was dominated by trees, particularly the dipterocarp species, pine trees (*Pinus kesiya*), narra (*Pterocarpus indicus*) and other fuelwood species. *Muyong* were usually clan-owned and were meant to supply wood for house construction, repair, and wood carving. The close interaction of the Ifugao with the mountains helped them understand the role of *muyong* in the maintenance of the ecological balance of their overall farming system. With this, they gave the protection of the headwaters utmost importance to ensure the stability of their water sources (Camacho et al. 2016; ILO 1995).

Citing another early account of human-environment connection, rich experiences with the mountainous environment led an indigenous community in Bayyo, Mt. Province to specialize in crop rotation, mixed cropping, soil fertility management, and a sweet potato cropping system. The tribe members practiced these cropping systems to maximize the land productivity without compromising the natural ecological processes. Similar to the Ifugao case, this indigenous community utilized *payew* (terraces) for rice cultivation. Yet, instead of a rice-to-rice cropping system they learned that rice-to-sweet potato was the best rotational cropping system to ensure good rice growth for the next planting season. Mixed cropping of vegetables was also practiced in the payew along with peanuts to ensure soil fertility.

Bayyo farmers also used sunflower (*Tithonia diversifolia*), which was considered as a weed because of its abundance, for soil fertility management. During the land preparation for rice cultivation, sunflower cuttings were applied in the paddy fields for slow decomposition. Indeed, the community in Bayyo showed innovativeness and resourcefulness in their farming system with the use of available natural resources for the sustenance of their production system (Magcala-Macandog and Ocampo 2005).

Akin to numerous IPs in the Philippines, the swidden-based culture of the Iraya Mangyan in Mindoro reflected the extensive indigenous knowledge of the tropical ecosystem. Their traditional kaingin system was in harmony with the natural processes of the forest ecosystem. Consequently, the system aimed to revert these cultivated lands to forests for the overall maintenance of the ecological balance. In choosing the field for kaingin, flora composition of the area was examined to determine its soil properties. The indigenous community would normally conduct the farming practice away from the headwaters of streams to protect their water sources. Prior to the burning, firelines were created to prevent the spread of fire to the entire forest. Big trees within the field were also covered with *saha ng saging* (banana trunk) to protect them from intense heat. With the use of stones and bamboo, these materials were rubbed against each other to produce fire that would start from the top of the trees and down to the lower portions of the field to prevent the upward spread (Panegro and Bulatao 2002).

Further, the kaingin system of the Iraya opened up small swidden plots surrounded with forest vegetation to imitate the natural biodiversity of the area. Various crops with different planting and harvesting seasons were planted to mimic the canopy layer and underground layer of the roots. Diverse root systems of trees and agricultural crops also served as a preventive measure against soil erosion. As regards forest regeneration, coppicing of tree stumps and seed dispersal from the adjacent forests were employed to hasten the regeneration during the fallow period. Essentially, the careful spatiotemporal manipulations done by the Iraya people portrayed a balanced resource extraction coupled with conservation and maintenance strategies to ensure the sustainability of the forest ecosystem (Panegro and Bulatao 2002).



The traditional farming methods of the B'laan, T'boli, and Tagakaulo in Mindanao also portrayed a human-environment connection. Both B'laan and T'boli farmers developed their own planting calendar based on the constellations. For B'laan, the signal for the start of the planting season was the appearance of the *samkyab* and *tubong* stars in the sky, while the T'boli

looked for a specific arrangement of the stars called *blotik*. A sign of two stars in the northeastern direction was the planting basis of the T'boli. However, if these stars were directly overhead, the different communities would interpret the positioning as a bad omen, thus preventing them from planting. Unlike with the previously mentioned IPs, these Mindanao indigenous communities employed a zero-tillage method in farming. Conical holes were dug by men during the planting while the women filled the holes with soil through a single sweep of the foot. This process prevented seed contamination and aided in the germination due to minimal soil disturbance. Throughout the year, a minimum of three rice varieties were planted for each planting season to ensure the seed diversity, prevent pest infestation, and assure seed viability (Zapico et al. 2015).

The presented accounts of the IPs depicted their mutual relationship with nature. Their practices elaborated a rich human-environment interaction that was perfected through time, resulting in advanced modes of resource extraction that were in harmony with the earth's natural processes. Yet the economy in precolonial Philippines remained domestic in nature despite their increasing engagement in marketing activities both locally and overseas (NCCA 2000). In precolonial times, the Philippines was still covered with thick dipterocarp forests, together with molave-narra forests in areas with pronounced dry season and shallow limestone soils, pine forests, and mossy forests in the Cordilleras, Zambales, and Mindoro islands, and beach forest including mangrove swamps (Pulhin, Amaro, and Bacalla 2005).



Birth of the Anthropocene: Colonization and Industrialization

In the Age of Discovery or the Age of Exploration,⁵ the “civilizing missions” of western countries paved the way to the exploration of the world, which was driven by their will to gain more power, territorial expansion, and control over the natural resources of eastern countries (Heffner 1918). When the Spanish colonizers arrived in 1521, the country was covered with approximately 27 million hectares (see Figure 1) of tropical forest (Lasco, Visco, and Pulhin 2001). From the communal form of land ownership, the colonizers claimed sovereignty and authority over these lands through the Regalian Doctrine which favored them and a few local elites.⁶ These policies impeded the rights of the indigenous peoples to own and cultivate their lands for subsistence, thus leaving them landless and squatters in their own country (Lynch 1986). At first, these colonizers were not much concerned with the commercialization of timber; instead, it was utilized for shipbuilding in support of the galleon trade⁷ during the mercantile era.⁸

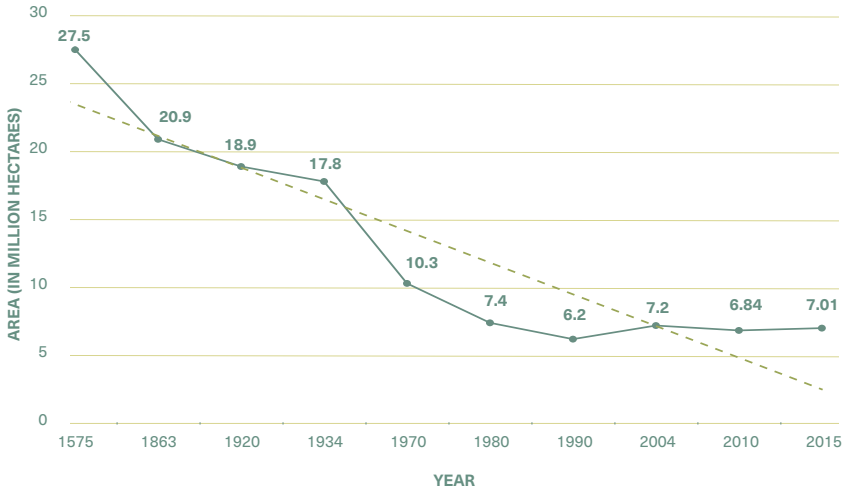


FIGURE 1. Changes in Forested Area in the Philippines, 1575–2015 (in million hectares) (Boado 1988; DENR–FMB 1998, 1990, 2004, 2010, 2015)

In the mid-nineteenth century, the Spanish colonial administration seized the opportunity to sell timber in Spain and other foreign markets. Depletion of timber during this period compelled the government to create the Inspeccion General de Montes, or Forest Service, which had the control, ownership, and administration over forest resources (Top 2003). Its strict regulation of forest use, the prohibition of unauthorized encroachment, illegal cutting of timber, and the banning of kaingin or shifting cultivation increased the marginalization of IPs (Makil 1982). The widespread implementation of *encomienda*⁹ over the traditional kaingin led to the clearing of molave-narra forests in Cebu, Bohol, and Ilocos Region (Pulhin et al. 2005). Agricultural expansion in these areas increased because of the high demand for agricultural crops from the newly industrialized countries, thereby shifting from being a subsistence economy to a world-market economy.

At the start of the twentieth century, shortly after the United States colonized the Philippines, the country’s forested area decreased to around 70 percent or 21 million hectares (Lasco et al. 2001). Although most of the laws and policies were retained, such as the Regalian Doctrine, changes in the administration were made to develop the potential of the country’s natural resources, including the extensive and still largely virgin forests. The Inspeccion General de Montes was replaced by the Forestry Bureau through General Order No. 50 on 14 April 1899 (Makil 1982). With the legislation of the Forest Act of 1904 and the Forest Law of 1917, the Forestry Bureau retained the power to classify land into private and public domains.

It was during this time that the Americans envisioned the industrialization of the Philippine forestry sector. Though it may seem successful because the country became Southeast Asia’s largest exporter of timber, the system was

designed to benefit only the colonizers and the allied local elite (Pulhin 1996). In fact, 662 timber licenses and 10 companies were permitted to harvest 2,831 m³ of timber between 1 July 1901 and 30 June 1902. The increasing demand for timber in the international market generated more profit for the major investors but caused an increasing deforestation rate.

Moreover, the forest condition worsened when scientific forestry was reinforced by the Americans to train local people in adopting the western concept of forest management.¹⁰ Embracing this concept required the locals to set aside their indigenous knowledge on harmony and sustainability with nature in exchange for the western concept, which prioritized production on the basis of economic demand in the international market. Americans established research facilities that focused mainly on determining the properties and uses of selected tree species in support of the newborn wood industry. Instinctively, this “scientific forest management” inculcated timber as the major forest source while disregarding the significance of other “minor forest products” (Pulhin 1996). The gap between humans and the environment widened with the application of this new management, neglecting the traditional management that is anchored in environmental protection and care. Indeed, Bedard and Ylvisaker brilliantly assessed the reality of advanced forest management of the Philippines consistent with the western concept of management:

The history of the utilization of Philippine forests is unique among Southeast Asian countries and probably unique in the entire tropics, in that exploitation developed more rapidly and with a higher degree of technical efficiency than in other similar areas. For this situation, the American occupation is probably responsible. American entrepreneurs entered the Philippine forests, bringing with them mechanized logging techniques largely from the Pacific Northwest of the United States. Philippine enterprises developed on the American model so that today Philippine exploitation techniques are the most technically advanced in the Asiatic and Pacific tropics. (1957, 7)

The introduction of modern logging practice supported the modernization and degradation of the forest. The American Insular Lumber Company, a 20-year renewable concession covering 30,000 hectares in Northern Negros, could produce 30 cubic meters of dipterocarp lumber per hour (Poffenberger and McGean 1993). In the 1940s American firms held 41 percent of investments for the sawmill industry, while 34 percent were owned by the Filipino elite, and the remaining 25 percent were owned by other foreign investors. Likewise, the issuance of mining permits and the enactment of Forestry Administrative Order No. 14-1,¹¹ which allowed agricultural expansion, compounded the state of forest degradation (Pulhin, Amaro, and Bacalla 2005). It was during this time that deforestation became more evident, but the Americans attributed the forest cover loss to the

kaingin practices of the indigenous and immigrants instead of their large-scale mechanized logging operations (Top 2003).

During the Japanese occupation in 1942, all districts and forest stations in the Philippines were still in operation. Rapid severe deforestation and devastation in the forest industry were recorded because of the exploitation of forest resources for war purposes (Pulhin 2002).

Great Acceleration: Degradation in Modernization

The aftermath of World War II left behind a desolate landscape of destroyed houses, devastated agricultural lands, and degraded forests. To support the macroeconomic policy toward industrialization, the forestry sector liquidated its forest resources into solid capital to stimulate economic development (Boado 1985; Quintos 1989). Increasing demand for tropical timber in Japan and the United States resulted in the issuance of more Timber License Agreements (TLAs) necessary to accelerate industrialization in the forestry sector.

During the Marcos martial law period, abuse of the Regalian Doctrine became more apparent as the president issued more TLAs to his favored logging concessionaires and even distributed “special cutting permits” to his cronies. As for his political enemies, most of their TLAs were canceled, not renewed, or suspended (Vitug 1993). The licensed area included 10.59 million hectares, which is more than twice the area in 1959, with an annual allowable cut of about 11 million cubic meters. This means that one-third of the country was more subjected to degradation because of this “legal” exploitation. Most of the logging concessionaires chose log exportation over wood processing as preferred by the licensees, since the former requires minimal capital outlay and has faster cash turnover (Pulhin 1996; Pulhin, Amaro, and Bacalla 2005). Since most of these licenses covered only a short period, many concessionaires ruthlessly harvested beyond sustainable limits and immediately escaped to look for other areas to exploit. Sadly the prevailing system benefitted only a few elites, mostly composed of politicians and well-connected individuals, thus stagnating the majority of the Filipinos to poverty and inequality.

The sudden boom of the logging industry benefitted the national economy as it geared toward industrialization. During its peak, 27 percent of the country’s foreign exchange came from forest products. Notably, freedom from colonizers and a more stabilized government greatly influenced population growth, and the abrupt population increase added to the surging demand for food and other basic needs. With this, the increased accessibility to forests paved the way for its increased exploitation through intensive agriculture, kaingin, and illegal logging. About 60 percent of forest denudation coming from extensive kaingin¹² farming applied in logged-over areas and brushland was recorded, while 30 percent of denudation was accounted for intensive agricultural expansion (Pulhin, Amaro, and Bacalla 2005).

The inculturation of the Filipinos became a catalyst for change in the human-environment interaction, which led to massive destruction of the

forest. Indigenous peoples were forced by the colonizers to settle in the most inaccessible areas within the mountains. Consequently, those who were left under the rule of the colonizers were obliged to embrace their hostile approach toward the environment. Domination of the foreign culture suppressed the indigenous culture, invading the minds and lives of majority of the Filipinos. Subsistent use of natural resources shifted to its commoditization to support economy-driven extraction that is fueled by the country's pursuit of industrialization specifically after World War II (Box 1).

While it can be assumed that the colonizers were the strong forces behind the economic shift, the broader reason behind the pursuit for industrialization was the pressure brought by the global trend during the Great Acceleration.¹³ Economic growth, which was almost synonymous with industrialization, was expected from the less-developed countries. Based on the growth-oriented paradigm from the West, the industrialization of the forestry sector became a catalyst for economic growth. One of the greatest influences of that time was the advocacy of Jack Westoby (1962) expressed in his book *The Role of Forest Industries in the Attack on Economic Underdevelopment* summarized in this central idea:

Forests are a most important asset of a country's wealth—an asset that every poor country possesses or could possess—for they provide a renewable raw material for a whole range of industries which have acquired great importance in many industrially advanced countries. This asset is very often neglected in less developed economies, or exploited only as raw material for export.

Unfortunately for the Philippines, the industrialization of the forestry sector was economically limited, short-lived, and sociopolitically and environmentally damaging.

In essence, the multifaceted history of forest destruction and degradation in the Philippines proved how the intensity and longevity of human activities could progress into something that could alter the forest and its functioning. The tremendous forest cover decrease shown in Figure 2 depicts the severity of colonization and its impact toward the forestry sector. Commoditization and primacy of timber resources over non-timber forest products manifested the inculturation of the Filipinos. Further, its persistence even after the colonization proved the intensity of the change brought by the foreign countries and the level of adoption of the Filipinos. Unfortunately, this also revealed how the indigenous knowledge systems and practices (IKSP) were undermined by this new culture that was indifferent to nature and its processes. Indeed, colonization coupled with the global forces on industrialization, globalization, and modernization compelled the Philippines toward the path of the Anthropocene.



From Destruction to Conservation: Evolution of Forest Policies

In the history of forest destruction and degradation, it can be understood that the Anthropocene is not merely concerned with the physical alterations in the environment, but mainly with the changes in human-environment interaction. More than the impacts on the biogeochemical cycles of the earth, the invasion in the minds and lives of the Filipinos should be the greater concern.

BOX 1. CHAIN REACTION: FROM COLONIZATION TO IP MARGINALIZATION, THEN SHIFT IN RESOURCE EXTRACTION

The intricacy of indigenous people's resource extraction schemes reflect the coupling of social and environmental systems, which posed little or no compromises on the biogeochemical functioning of the earth. Perfected through time, these manipulations allowed them to maximize the potential of their environment for the provision of their basic needs and the maintenance of harmony. Indigenous knowledge systems and practices (IKSP) such as the payoh-pinugo system and kaingin practice are a few of the acknowledged sustainable traditional practices attained not through scientific advancements, but rich experience with nature (Camacho et al. 2016; ILO 1995; Panegro and Bulatao 2002). Looking at the Philippines and the status of the forest today, an enormous gap can be found between the previous and the current manner of resource extraction. Evidently, the country's history of colonization did not only encroach upon Philippine lands, but also upon the identity, culture, and minds (ADB 2002; Buendia 1993) of Filipinos—with long-term consequences leading to the Anthropocene.

During the Spanish period, most indigenous peoples such as the Tagabukid of Sibuyan, who used to settle in the lowlands, chose to escape from tuga (forced labor) and fled to the inaccessible areas within the mountains. Likewise, the Igorot people of the Cordillera resisted strongly against the colonial forces to secure their people and lands. Since the colonizers couldn't overpower the indigenous peoples, they seized this opportunity to inflict division among the Filipinos by labeling them with derogatory names.

For instance, the Tagabukid were identified as “mangyan,” “mangyas,” or “manguid,” which means “illiterate,” “unclean,” “liar,” and sometimes, “criminal.” Shortly after, even the indios internalized these prejudices toward the indigenous peoples, which resulted in the dichotomy between the assimilated majority and unassimilated minority, thus igniting one of the major problems that persisted through time—the marginalization and discrimination of indigenous peoples (ADB 2002; de Guzman and Dinopol 1997).

Discrimination against non-Christian IPs continued as the new colonizers, the Americans, adopted the racist tribal policies of the Spaniards. With the booming logging industry, the American entrepreneurs saw the potential of the peaceful and hardworking “mangyan” people of Mindoro as a labor force for the large-scale logging operations on the island. With this, the Mangyan were alienated from their ancestral domains and were displaced to the hinterlands. This process was similar to what these American entrepreneurs did with the Native Americans: after claiming the lands of the natives, they unscrupulously harvested the timber in the area. Subsequently, armed men during the Japanese period invaded the Iraya people of Northern Mindoro, forcing them to live in the upland areas. In the 1950s, the quiet life of the Iraya was interrupted because of the encroachment of loggers, cattle raisers, and lowland farmers who exploited their natural resources (Panegro and Bulatao 2002). It was during this period that the criminalization of kaingin practice of the indigenous people occurred—widespread deforestation and degradation were associated with kaingin to conceal the massive destruction brought by the mechanized logging companies.

Even after the colonization period, denial of the rights of the IPs on their ancestral domains continued to persist with the enactment of Presidential Decree No. 705 or The Forestry Reform Code of the Philippines, which stated that “no lands of the public domain with a slope of 18 percent or more which have already been classified as alienable and disposable shall be reverted to the classification of forest lands . . . to form part of the forest reserve . . . that when the public interest so requires, steps shall be taken to expropriate, cancel effective titles, reject public land applications, or reject occupants thereof” (Official Gazette n.p.). Despite the continuance of the Regalian Doctrine in the current 1987 Constitution, enactment of the Indigenous Peoples Rights Act (IPRA) in 1997 clearly elaborated the recognition and promotion of the rights of the indigenous people/Indigenous Cultural Community (ICCs) within the framework of national unity and development, including their rights over the ancestral lands to ensure their economic, social, and cultural well-being. Unfortunately, the intended benefits of this law have not yet been fulfilled and experienced by most IPs. Numerous conflicts on unlawful encroachment, misinterpretation of laws, undefined boundaries, and overlapping programs are some of the challenges to the implementation of the IPRA Law.

The history of discrimination and marginalization of the IPs from the period of colonization impacted the transfer of culture from one generation to another.

This tragedy is called psycho-cultural marginality, or the loss of one's cultural identity along with social and personal disorganization. The inhabitation of the IPs also denied its people access to traditional culture, values, and norms that led to historical trauma and cultural alienation. Inaccessibility of indigenous culture made it easier for western culture to creep into the minds and lives of the Filipinos (Cruz 2019). Inculturation of the IPs led to the alteration of their human-environment interaction, since their culture was highly tied to their environment. From sustainable and subsistence resource extraction, colonization and industrialization influenced capitalistic resource extraction in the Philippines. Likewise, the market-driven economy led to the primacy of timber over the so-called minor forest products. Continuance of timber extraction even after colonization reflected the domino effect of the inculturation. Consequently, it continued to belittle the non-timber forest products that essentially provided the basic needs of the IPs and kept the ecological balance prior to the colonization period.

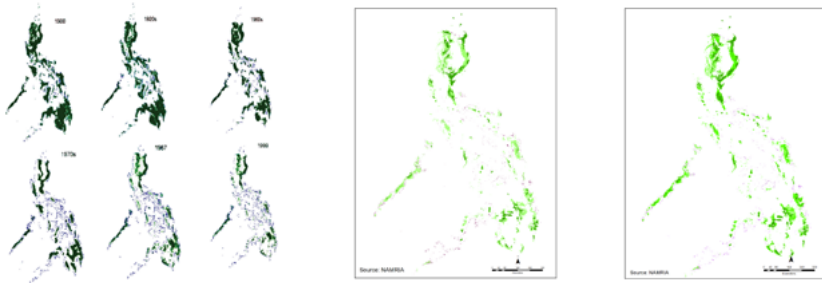


FIGURE 2. Changing Forest Cover of the Philippines (DENR-FMB 2000; NAMRIA 2010–2015)

Underneath all the changes in the environment and manipulations of the mind are the laws and policies that influence these changes. Policies and laws are principles that guide the decisions to achieve the desired outcome (Jili'ow 2017; Rebugio 1995). Their conceptions are intertwined with social, economic, political, and cultural contexts enveloped with the influences from historical trends and global processes (Rosa et al. 2015). On the other hand, the interconnection among man, environment, and policies can also be used for the conservation of forests amid the driving forces of colonization, industrialization, modernization, and commoditization. Scrutinizing the different periods in Philippine history also reveals the evolution of beliefs, commitments, values, visions, and wisdom of the Filipinos as reflected by the governing laws and policies and its impact on the environment.

Customary laws of different cultural communities in the Philippines before colonization embodied the intimate connection between man and his environment. Laws laid the foundation for justice, unity, and peace within the communities. They are the by-products of the indigenous forestry knowledge

system that encompassed local technologies, innovations, know-how, skills, practices, and beliefs. In general, the engagement of the IPs with the spiritual realm led them to manipulate and utilize their natural resources with high regard. They understood that impairment of nature due to destructive practices could also affect their lives (Cola 2002). For instance, the Ifugao implemented tribal laws for the protection of their natural resources (ILO 1995). Illegal practices such as extensive cutting of trees in the muyong were given penalties. Communities who practiced kaingin also penalized and punished those who caused widespread fires resulting in extensive destruction of the forest and its resources (Panegro and Bulatao 2002).

Another noteworthy case is the multiplicity and ingenuity of the customary laws of the Tagbanwa people in Palawan, which ensured the sustainability of natural regeneration capacity and conservation of biodiversity. Anchored on the belief regarding oneness of physical, social, and spiritual worlds, every member maintained harmony with nature despite their resource extraction. Their extraction processes followed five principles with which their strategies and practices aligned:

1. **Waste prevention.** Ensuring the use of all harvested resources to avoid wastage, thereby promoting resource sharing among the community.
2. **Precautionary management.** Preventing or mitigating adverse impacts and ensuring that natural processes are not disrupted in their resource extraction.
3. **Sustainable harvesting.** Avoiding depletion of the supply and disturbance of natural regeneration capacity.
4. **User's payment arrangement.** Compensating other potential resource users higher for greater forgone extraction opportunities.
5. **Natural pattern preservation.** Avoiding adverse impacts to the environment. (Cola 2002)

However, a sudden shift in the human-environment relation occurred as the colonizers invaded not only the country's territory and resources, but also its legal system. The colonizers introduced a new value system which is different from the customary laws of the IP. The previous legal system evolved in conformity with the new legal system, which regrettably affected the behavioral pattern of Filipinos, including their concept of right and wrong (Cola 2002).

In the early days of Spanish colonization, the implementation of the Regalian Doctrine institutionalized the Spanish Crown's ownership of all lands, including their natural resources. The Crown issued royal decrees providing instructions for the management and use of the forest. It can be observed that the colonizers had three pronounced areas of concern for forest policies: 1) provision of timber for Spanish civil and naval needs; 2) generation of government revenue; and 3) perpetuation of the forest resource. The legalization of the land ownership was also implemented, superseding

the communal land ownership of the IPs. The change in the system negatively affected the IPs as their commitment toward forest protection and management began to wane (Pulhin 1996, 2002; Pulhin, Amaro, and Bacalla 2005). The *encomienda* system, which is a labor and tribute system, added up to the oppression of the natives. This caused estrangement of the common Filipino from the elites because of the latter's abusive powers. (Anderson 1976; Teodoro 1981). The establishment of the *Inspeccion General de Montes* (IGM) legalized the control, ownership, and administration of forest resources. Strict regulation and prohibition of unauthorized encroachment in forestlands, illegal cutting of timber, and the practice of *kaingin* were also implemented (Pulhin 1996). The IGM served as a license to reprimand IPs for practicing their way of life, particularly resource extraction that is mainly for subsistence.



The American occupation brought multifaceted alterations in the country as the Americans sought to industrialize and modernize the forestry sector. Through policies and laws, the colonizers were able to legalize the exploitation of natural resources. The *Regalian Doctrine* was retained followed by the enactment of the *Philippine Act of 1902*, which reinforced the public ownership of unclassified and untitled lands. By 1903, the *Public Lands Act* specified the land classification system wherein *Alienable and Disposable Lands* could be privately owned, while *Public Lands* remained to be owned and managed by the government (Top 2003). After classifying the lands, the *Forest Act of 1904* was implemented to encourage rational exploitation of forests by installing an appropriate regulatory environment to prescribe fees and taxes, and to define parameters for the conversion of forest land to agriculture. This law served as the decisive regulatory mechanism of Philippine forestry and the basis of all elements of forest management (Pulhin 2002; Pulhin et al. 2005). The Act granted corporate access to public forest through *Timber License Agreements* (TLAs), which “provided the right to utilize forest resources within any forest land without any right of occupation or possession over the same, to the exclusion of others except the Government, but with the corresponding obligation to develop, protect and rehabilitate the same in accordance with the terms outlined in said agreement” (Boado 1988).

With the introduction of mechanized logging and the issuance of numerous TLAs, more virgin forests were exploited and age-old trees were harvested. Mining permits were also issued, resulting in the destruction of many public forestlands. Logging and mining operations unintentionally provided entry to these inaccessible areas, giving way to agricultural expansion and *kaingin* (Pulhin 1996; Pulhin, Amaro, and Bacalla 2005). In 1917, the public forest of the

Philippines was “held and administered for the protection of the public interest, utility and safety of the forest, and the perpetuation thereof in productive condition of wise use” (Hyman 1983). Although Philippine mahogany¹⁴ found fame in the international market and a large sum of money was earned from its sale, forest conservation and sound management were almost lost.

The postwar era confronted the country with pressures to restore itself from the ruins while accelerating toward industrialization and modernization. Since the international demand for Philippine mahogany was still quite high and remnants of trees were still available for exploitation, the government seized the opportunity to liquidate the forest resources to solid capital for economic development. In addition, the elite managers of TLAs expanded their production and consumption to hasten their return on investment (see Figure 3). Considering that timber harvesting involved exploitation of natural resources and the use of mechanized logging equipment, it is no surprise that it led to pollution and forest denudation. The treadmill of production theory (TOP) as proposed by Allan Schnaiberg (1980) clearly depicts how social forces influence human pressure on the environment consistent with the desire for economic growth and modernization. The basic argument of this theory is that,

at least since World War II, “producers” (i.e., the owners of the means of production, such as factories) and elite managers, especially corporate leaders, have sought production and consumption as rapidly as possible to increase profits . . . Similarly, governments support growth because it generates tax revenues, which allow those in government (who are often social elites connected to corporate power) to implement policies and programs aimed at fixing the problems that economic growth itself has generated, such as pollution and unemployment. Thus, economic growth generates environmental and social problems, and those in power push for further growth to solve these problems in an ongoing “treadmill” . . . [TOP argues] that contemporary capitalist political economies promote economic growth, prioritizing it over concerns about social inequality and environmental protection. (Rosa et al. 2015)

To support the growing timber industry, the government implemented policies and programs that would maximize the profit in timber harvesting. For example, the provision in Article 13, Section 1 of the 1935 Constitution stating that all timber lands “belong to the State” became the guiding principle for the proliferation of more timber licenses (Pulhin 1996). The issuance of TLAs peaked during the Marcos regime as he centralized the control of these economic resources to a few traditional elites, mostly composed of his friends and family. Marcos also used the TLAs to reward his supporters and his political allies obviously as a mechanism to maintain political power and control. The President’s relatives, few elites and cronies owned large-scale logging companies that earned millions from logging exportation. It was also during

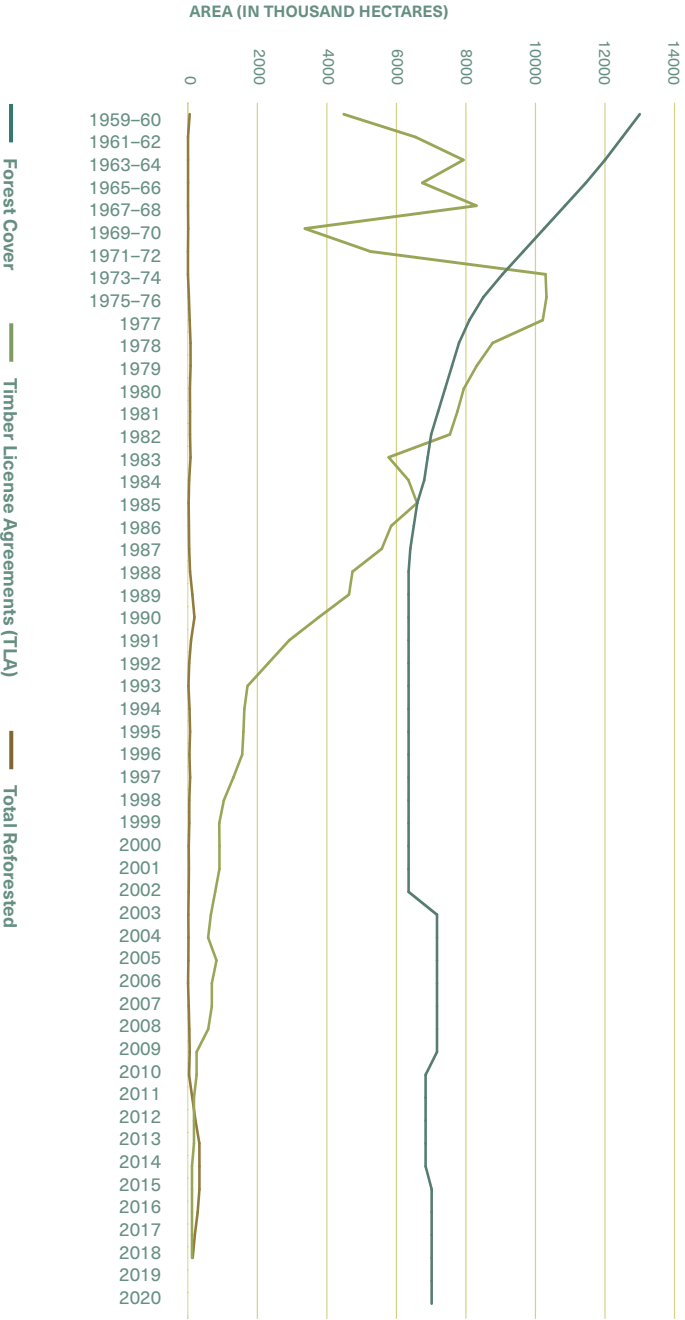


FIGURE 3. Areas of Forest Cover, TLAs, Reforestation Initiatives, CBFMs, and CBFMs in the Philippines, 1959–2018 (Boado 1988; DENR–FMB 1990, 1995, 2000, 2004, 2005, 2010, 2015, 2018; DENR 1990)

this time that land-grabbing and privatization became prevalent; thus, his allies were favored while the upland communities including the IPs were oppressed (Vitug 1993). Unfortunately, this period also recorded the greatest decline in forest cover with the highest rate of forest destruction. In addition, there were also rampant corruptions within the system. The extremely low forest charges imposed by the government for forest exploitation were not enough to provide for forest management and renewal. The low forest charges possibly stimulated corruption and bribery, since high profit margins encourage the TLA violators to bribe their way out, considering that its cheaper for them to do so instead of complying with existing rules and regulations (Pulhin 1996).

To lessen the possible negative repercussions of excessive harvesting, the Philippines enacted laws and programs that promoted sustainable use of the forest resources based on the scientific forest management taught by the Americans. In 1954, Forestry Administrative Order No. 23 recommended that logging operations in areas classified as permanent forest should be under the sustained yield management. The Selective Logging System to the Philippine dipterocarp forest, as explained in Box 2, should be implemented in the said areas. This order was followed by administrative orders, directives, memoranda, and circulars consistent with the promotion of selected logging and sustainable forestry. Correspondingly, a *Handbook on Selective Logging* commonly known as the “bible of Philippine forestry” was published by the Bureau of Forest Development (BFD) in 1995. The book contained the rules and regulations for the implementation of selective logging together with the related memoranda and circulars. P.D. No. 331, Series of 1973 strongly prescribed sustained yield as the basis for the development, management, and utilization of all the country’s public forests. Likewise, Presidential Decree No. 705 or the Revised Forestry Code of the Philippines issued in 1975, together with its amending decrees reiterated the implementation of selective logging as the silvicultural and harvesting system for dipterocarp forests, thus promoting sustained-yield forest management (Pulhin 1996).

In spite of the sound laws and policies and advancement of scientific forest management, failing to actualize sustained yield in forest management was inevitable. Most of the local specialists concluded that the main deficiency of the system was its failure in the implementation phase. The failure was associated with the prevailing political and economic orientation of the concessionaires from its implementation in the 1960s. It is indeed true that there were constraints in the technical aspect of sustained yield forest management, but still, the political, economic and social influences were more important (Pulhin 1996). As elaborated by Uebelhör, Lagundino, and Abalos:

During the time (1960–1980s) which saw the largest conversion of virgin into logged-over forest (approximately 4 million hectares) the legal and political climate was not conducive to sustainable resource management. The government lacked the political will and the administration did not

show the necessary determination to control and to enforce the rules and regulations which they had given themselves. Concessionaires entrusted with the management of the country's forest were not induced to comply with the existing rules and regulations because of the doubtful security of tenure of their operations, the absence or unlikeliness of control and the easiness with which an increasing number of indifferent officials could be "convinced" to ignore violations. (1990, 36)

BOX 2. PHILIPPINE SELECTIVE LOGGING SYSTEM (SLS) AND ITS IMPACT ON THE PHILIPPINE FORESTRY SECTOR

Although the western concept of forest management varied greatly from indigenous knowledge systems and practices (IKSP), its strength on scientific management resulted in the conception of the Philippine Selective Logging System (SLS). It was a system of harvesting appropriate for uneven-aged tropical forests which also served as a forest protection strategy for diverse flora and fauna species. The government leased a large tract of public forest land to a logging company for 25 years, allowing them to remove the mature, overmature, diseased, and defective trees, leaving behind an appropriate number and quality of residuals for the continuity of ecological services, such as soil and water conservation. This process provided an opportunity for the climax stands to be converted to more productive forests, as the harvesting opened adequate spaces for forest regeneration.

Technical guidelines were given to ensure the sustainable management of the forests and to maximize the growth and yield rates of the premium timber species. After the first cutting cycle, it was assumed that the forest will be left for 30 to 40 years to give ample time for its recovery/regeneration. The whole concession area was divided into different portions that were scheduled to be cut yearly. Accurate calculations of the volume of timber to be extracted were necessary to ensure that the regenerated forest stand would be ready for the second cutting cycle at the end of the licensure agreement. This system covered three phases of forest management: establishment, tending, and harvesting, including the protection of the logged area.

Conversely, the sophisticated SLS hardly materialized on the ground because most often, the concessionaires would just choose to pay the meager penalty price instead of spending more money and resources on reforestation. Short-sightedness of these concessionaires prevented them from planning for a sustainable logging system. Evidently, they were more concerned with earning easy money from the forests and leaving them degraded. Another factor was the inconsistency of the government in implementing the law. Other government sectors were powerless during these times because of the monopolized power possessed by President Marcos, therefore no cancellation of TLAs was given to his allies and cronies (Vitug 1993).

On the other hand, the experience of the Surigao Development Corporation (SUDECOR) gave a glimmer of hope on the possibility of timber harvesting of residual forests in a sustainable manner. Since 1965, the company implemented sound forest management and development practice consistent with the prescribed laws, rules, and regulations, particularly the SLS. Their consistent compliance resulted in the maintenance and protection of one of the best growing stocks of naturally regenerated dipterocarp forests in the Philippines. Based on SPOT satellite imagery, 90 percent of the concession area was mantled with green tropical forest vegetation. Production zone accounted for 51,570 ha, or 68 percent adequately stocked production zone. Though their compliance with the 1992 government policy banning the logging of old-growth forests restricted their operable residual forest to only 36,216 ha, this proved that the company maintained a vast tract of old-growth tropical forests, with a quite profitable harvesting area on well-stocked secondary forests. Further, the company incorporated biodiversity measures to ensure the sustainability of the production system prior to the cutting operations. The annual allowable cutting area was only 1,035 ha with only 65,770 m³ of annual allowable cut, thus only 10–20 matured trees per hectare with a merchantable size of at least 60 cm DBH (diameter at breast height) could be harvested. SUDECOR adopted the 35-year cutting cycle (harvesting in a particular portion every 35 years only) that gives adequate time for the regeneration of the area. In terms of the protection zone, the company allocated the 24,192 ha, or 32 percent of the total forest concession to ensure that the integrity of the forest including its ecological services was maintained (Durst et al. 2005; SUDECOR 2017).

Sadly, contradicting policies like the enactment of Executive Order No. 23, which ordered a total log ban across the country, forced the shutdown of SUDECOR's operations. Due to frequent flooding incidents in Mindanao, the government implemented the ban to stop illegal logging operations. Ironically, only legal logging operations were halted, while illegal logging and both large-scale and small-scale mining persisted in the residual dipterocarp forests, sub-marginal forests, and even in the proclaimed watershed reserves. Evidently, the log ban has led to more forest cover losses without any clear mechanisms for sustainable forest management (SUDECOR 2017).

Moreover, the Paper Industries Corporation of the Philippines (PICOP), which operated in 1963, was the only fully integrated pulp and paper mill in Southeast Asia. It achieved and developed its expertise in wood technology and paper manufacturing and was acknowledged worldwide for the high quality of their exported plywood, veneers, and logs. Locally, it provided paper products such as newsprint, kraft linerboard, corrugated medium mechanical paper, and telephone directories. PICOP was also known because of its Livelihood Enhancement Agro-forestry (LEAF) Program that encouraged many private landowners and farmers to develop their land for food and fuelwood production. The program was designed to enhance the socioeconomic conditions of the private landowners and farmers. At the same time, it was a

counteract measure for the destructive *kaingin* practiced by the farmers along the sloping and rolling lands. In 1980, almost 3,800 landowners and farmers participated in the program because PICOP served as a technical partner and buyer of pulpwood to the farmers, hence providing a direct and secure market for the harvested timber (Casiro and Catubig 2019).

PICOP was also engaged in the Modified Social Forestry Program with the *kaingineros* and forest squatters who entered the concession area on or before 31 December 1981. *Kaingineros* and forest squatters were considered as “Tree Contract Growers.” They planted *ipil-ipil* (*Leucena leucocephala*) and *falcata* (*Albizia falcata*) at one hectare per month within the 10-hectare lot allocated to them. The company gave them free seedlings and allowed them to interplant cash crops and fruit trees, provided that the pulp tree was still growing. They also encouraged poultry and livestock raising. PICOP also paid the tree growers for their services and gave them the priority to harvest the trees for free upon reaching the rotation age of eight to ten years. Above all these, PICOP was committed to the implementation of sustainable and ecological forest management practices without neglecting the goal of improving the socioeconomic status of the communities that surrounded the concession area (Casiro and Catubig 2019).

However, the company was forced to shut down in 2006 because of entangling concerns on both external and internal problems such as natural calamities; national economic and political instability; high fuel costs in the international market; unfavorable national market conditions due to market globalization; subtle effects of full privatization; the emergence of poachers, smugglers and other illegal log buyers within the concession area; and legal and environmental constraints (Casiro and Catubig 2019).

From the theoretical and empirical perspective, SLS exhibited the role of silviculture and applied forest science in pursuing sustainable forest management that could satisfy the needs of this current generation without compromising the ability of the next generation to utilize and enjoy their natural resources. Although PICOP elaborated on the various reasons for its shutdown, it can still be observed that for both SUDECOR and PICOP, policy interventions directly affect not only the violators, but also the compliant institutions. Hence, it is imperative to carefully think of policy interventions, implementation, and future trajectories because they have the greatest capacity to shape and realign the path that the Philippine forestry sector is now taking.



Shift toward Community Forestry and Forest Conservation

Overwhelming global pressure on industrialization led the Philippines to pursue economic development regardless of the environmental consequences that it entailed. The industrialization model of Westoby (1962) became the blueprint for development, elaborating the various economic growth stages that should be attained by developing countries. The model was also associated with the “top-down approach,” which assumed that the development in the forestry sector through industrialization will result in the diffusion and multiplication of developments to the other sectors of the economy. In reality, this strategy distilled little effects to developing countries while incurring greater benefits to the developed countries because of the continuous supply of forest products for the latter (Pulhin 1996).

Shortly after its implementation, the global arena was struck because the intended economic growth of the developing countries through the “top-down approach” failed to materialize. Likewise, the perceived trickle-down effect of socioeconomic benefits to the other sectors of society, specifically the rural poor, did not happen. In fact, most of the developing countries were left with degraded forests and with little or no economic development. Poverty became a widespread problem in these countries, which aggravated their current scenarios. On one hand, the 1976 report of the World Employment Conference argued that poverty problems in the developing countries could be alleviated not by the “abandonment of growth as an objective” but through the “redistribution of growth.” This approach suggests the prioritization of the poorer groups in terms of development investments. With this, a shift in the development thinking took place to focus more on the redistribution of the benefits of growth directed to the poorer groups. Development projects in the rural sector focused on increasing the productivity of small farmers and the self-employed through the improvements in the access to land, water credit, markets and other facilities (Chenery et al., 1974). Subsequently, the Geneva-based International Labour Organization (ILO) popularized the “basic needs approach” in support of these prevailing concerns. This approach prioritized the fulfillment of people’s basic needs, including non-material needs, at the shortest possible time and the concrete specification of poverty to combat it through public service (Pulhin 1996).

Locally, the global concern about Redistribution with Growth motivated the Philippine government to redirect its steps. Various programs on forestland occupancy for the upland communities were stipulated in Presidential Decree No. 705, or The Revised Forestry Code of the Philippines. Some of the most prominent programs were Forest Occupancy and Management (FOM) in 1975, Communal Tree Farming (CTF) in 1978, and

Family Approach to Reforestation (FAR) in 1979 (Pulhin, 1996). Similarly, the emergence of community forestry as a new approach highlighted the role of social equity, poverty alleviation, and resource sustainability in rural development through a people-centered development. From the perspective of rural development, environmental stability through the maintenance of tree cover was equally important to meet the basic needs of the people. At the center of this approach was the community—people who were unable to express their needs as an effective economic or political demand, but as only the forest's. It sought to provide direct benefits of the forest to rural people (Pulhin 1996).

Thereafter, these programs were consolidated to one: the Integrated Social Forestry Program (ISFP) through the Letter of Instruction No. 1260 issued in 1982. This program primarily aimed to “democratize the use of public forestland to promote more equitable distribution of forest bounty.” It officially adopted social forestry as a forest management and development strategy in the Philippine uplands. There were three primary goals for this program: (1) to decrease forest destruction by shifting cultivation, (2) to fight poverty among forest occupants, and (3) to help in the rehabilitation of the forest (Pulhin 1996).

However, it was argued that the implemented social forestry was just the surface of a bigger political agenda of the government: the program was actually part of the overall rural development counterinsurgency strategy of the Marcos administration. Community forestry, on one hand, was the instrument used to control and stabilize intense political unrest in the countryside. Most of the social forestry programs were concentrated in areas with high insurgency problems. Similarly, the government's goal to rehabilitate the forest through reforestation projects scattered all throughout Marcos's term was in opposition to the continued rampant commercial extraction of timber by the TLA holders (Pulhin 1996).

By this time, the global paradigm shift on development approaches gradually influenced the Philippines to adopt the new concept of sustainable development. Its conception came from the learnings in past approaches, particularly the promotion of economic efficiency during the industrialization period. As the Brundtland Report conceptualized it, sustainable development is a development approach that meets the needs of the present without compromising the ability of future generations to meet their needs. The three dimensions of sustainable development overlapped with the major roles of community forestry: First, social justice from the context of sustainable development prioritized the allocation of resources to the smallholders, particularly women. Decentralization was also recommended so that the local communities could have control over the management of their resources. The second dimension, economic efficiency, gave utmost importance to the satisfaction of basic needs of the community, highlighting the concern on poverty alleviation (because solving poverty and inequity meant solving

ecological problems and other crises, too). Finally, environmental or resource sustainability recognized the physical limits on the use of the resource base and the need to conserve and enhance these resources for future generations (Pulhin 1996).

In 1986, the restoration of the Philippine democratic government also made its way for the reconstruction of the new Constitution. Consistent with the concept of sustainable development, this constitution prioritized equitable access and distribution of benefits from natural resources (Pulhin 2002). In relation, the Aquino administration enacted Executive Order No. 192 for the Reorganization of DENR as the primary government agency responsible for the conservation, management, development and proper use of the country's environment and natural resources. Meanwhile, the concept of decentralization, people's participation, and the recognition of the sociopolitical dimension of forestry became the impetus for the subsequent policy formation. This was similarly applied upon the pragmatic realization that it was in the hands of the millions of smallholders that survival of Philippine forests would be possible. It also supports the concept of decentralization and devolution which emerged as a dominant governance paradigm with the passage of the 1992 Local Government Code.

Issuance of the Department Administrative Order (DAO) No. 22 in 1993 by DENR for the establishment of Community Forestry Program (CFP) commenced the succeeding initiatives for various people-oriented forestry programs and projects. Basically, CFP aimed to initiate community-based forest development and utilization of natural resources and protect the remaining primary forests in partnership with the local community (Sajise 1998). The program acknowledged that it was through community forestry that upland poverty alleviation, social justice, equity in resource distribution, and forest stability can be successfully attained. Fortunately, the expansion of community forestry programs in the country was facilitated and supported by numerous international funding agencies providing both the technical and financial needs to sustain it (Pulhin 2002).

The orchestration of the history of forest destruction and degradation of the country, complemented by the various policies and trends involving the environment, vividly demonstrate the dominance of humans over the environment. Trends explicitly show how laws and policies intertwined with social, economic, political, and cultural contexts could turn the once-lush forest stocked with high-volume and prime timber species into an abandoned, denuded forest because of excessive logging operations. These trends also reflect how these policies were responsible in shaping the minds and lives of Filipinos through time. However, the later shift toward community forestry rekindled the possibility of recovering the once-denuded forest through better laws and policies. In understanding their nature, dynamics, and implications for change, policy intervention can lead to a new era of forestry conservation and management despite the changing environment in the age of the Anthropocene.



Initial Detour: Community-Based Forest Management

Community-based Forest Management (CBFM) traces its history from the precolonial period, when humans were still living in harmony with nature, down to the destruction and degradation of forests in pursuit of growth and development. It is an attempt to salvage what is left due to the government's failure to ensure sustainability of forest resources and equitable access to forest benefits (Pulhin, Amaro, and Bacalla 2005). In effect, CBFM is the culmination of all the reflections from past forest governance and the country's efforts to address upland poverty and forest degradation.

The enactment of Executive Order No. 263 on 19 July 1995, which adopted CBFM as the national strategy for sustainable forest management and social justice, signaled the rise of people empowerment, community participation, and sustainable development—principles on which the policy was founded. CBFM evolved from earlier people-oriented programs, including FOM, FAR, and ISFP.

The implementation of CBFM is strengthened by other supporting policies such as (1) the Local Government Code (Republic Act 7160), which devolved some of the functions of DENR to the Local Government Units (LGUs) and provided numerous opportunities for forest management; (2) the National Integrated Protected Areas System Act of 1992, which encouraged the participation of communities in managing Protected Areas (PAs) through the issuance of tenure to communities residing within the buffer zones; (3) the Indigenous People Rights Act (IPRA) which promoted the rights of IPs over their ancestral lands, giving them the operational and collective-choice level rights (Ramirez, Lecciones, and Capiña 2019); (4) Executive Order No. 318, "Promoting Sustainable Forest Management in the Philippines," which is the guiding principle for the holistic, sustainable, and integrated development of forestry resources while prioritizing rehabilitation, slope stabilization, and protection; and (5) the Philippine Strategy for Sustainable Development (PSSD), which promote restoration or rehabilitation of open and degraded forest lands (Rebugio et al. 2016).

A year after CBFM's enactment, the DENR issued DAO No. 96-29, "Rules and Regulations for the Implementation of E.O. 263" and Memorandum Circular No. 97-13, which provided the strategic action plan for CBFM. The plan envisioned that by 2008, about nine million hectares of forestlands will

be under community management, including the open areas from cancelled and expired TLAs. By the year 2004, the issuance of EO 318 under the Arroyo administration reiterated the achievement of sustainable forest management through CBFM. Amendments to the rules and regulations of CBFM were also made through the issuance of DAO No. 04-29. The changes removed some of the bureaucratic requirements, thus making the program more flexible for the participating communities (Pulhin, Inoue, and Enters 2007). As of 2018, there were 1,884 Community-Based Forest Management Agreements (CBFMAs) issued, covering 1,615,598 hectares and benefitting 1,884 People's Organizations (POs) across forestlands in the country (Table 1).

TABLE 1. Community-Based Forest Management Agreements

REGION	NO. ISSUED	TENURED AREA	BENEFICIARIES			
			NO. OF MEMBERS			NO. OF PEOPLE'S ORGANIZATIONS
			TOTAL	MALE	FEMALE	
Philippines	1,884	1,615,598	191,356	124,306	67,050	1,884
CAR	88	62,787	1,647	1,193	454	88
Region 1	19	38,654	11,951	7,999	3,952	139
Region 2	109	264,280	8,420	6,421	1,999	109
Region 3	120	66,823	6,242	4,893	1,349	120
Region 4A	47	18,401	3,760	2,319	1,441	47
MIMAROPA	77	90,145	6,836	4,566	2,270	77
Region 5	119	49,702	8,462	5,603	2,859	119
Region 6	104	34,054	8,555	5,691	2,864	104
Region 7	211	57,656	14,794	9,149	5,645	211
Region 8	144	117,509	8,355	5,447	2,908	144
Region 9	145	90,193	10,948	6,842	4,106	145
Region 10	294	209,147	28,537	19,365	9,172	294
Region 11	105	210,063	8,633	6,233	2,400	105
Region 12	56	96,101	9,943	7,462	2,481	56
Region 13	126	210,083	54,273	31,123	23,150	126

Source: Data from DENR-FMB (2018)

Key Actors Involved

The interplay among the POs, the DENR, and the LGUs is necessary for the operationalization of CBFM. The POs are the main actors of forest management in charge of utilization, protection, and rehabilitation of forests and natural resources in exchange for the 25-year tenurial instrument, the CBFMA. To get a tenurial instrument, the POs should submit a Community Resource Management Framework (CRMF) and a five-year work plan containing the strategic plan of the community on how to manage and benefit from forest resources sustainably. This will serve as a guide for how the community will protect and use their resources as they implement equitable sharing among their members. The POs must implement the plans usually with little to no financial support. During their occupancy, they are tasked to protect, rehabilitate, and conserve natural resources as well as the adjacent forest lands. The people serve as forest guards as they protect the area against illegal loggers and timber poachers.

The DENR's role is dispersed throughout the implementation of the CBFM program. First, the DENR field offices identify possible CBFM sites and potential program participants. They are also tasked with the processing and approval of CBFMAs and providing technical assistance for the creation of CRMFs. During the implementation, the DENR field offices are tasked with monitoring and evaluation of the CBFMAs of the POs. The DENR-FMB serves as the National Coordinating Office of CBFM programs (CBFMPs), responsible for the drafting of policies, guidelines, and procedures on CBFM; reviewing CBFMPs; and liaising with other government and non-government organizations (NGOs) for their support in the program.

The Local Government Units (LGUs), on the other hand, participate in CBFM through the devolved functions of DENR. Policies and ordinances pertaining to forest management and protection are being enacted and implemented in their jurisdiction. Other actors involved in the program include the international funding agencies who provide technical and financial assistance to the POs, and academic or research institutions who aid in the formulation of science-based forest policy, provision of technical assistance, and project monitoring (Chokkalingam et al. 2006).

CBFM Across Time

In the face of humans' antagonistic role in forest destruction and degradation, radical changes such as the paradigm shift toward community forestry have shown the country's desire to find multidisciplinary solutions to these problems. As such, the enactment of CBFM as the national strategy for sustainable upland development captured how the interplay of humans, environment, and policy can be beneficial overall. However, the challenge of implementing the CBFMPs and materializing their perceived benefits on the ground still remains. Box 3 provides selected case studies that narrate the implementation of CBFM in the Anthropocene.

BOX 3. DECONSTRUCTING CBFM: INTERRELATIONSHIP OF PEOPLE, FOREST AND POLICY THROUGH TIME

Case Study #1: Community-based Forest Management Policy and Cultural Practices of the Sama People

CBFM is the country's decisive step in promoting social equity and sustainable development through equitable access to forest resources. Complemented by the IPRA Law, the program acknowledges the capacity of the Indigenous Peoples (IPs) to manage their lands both for utilization and protection of the forest. Yet, Cuizon (2007), in his analysis of the impacts of Community Forest Management policy in the context of cultural practices of indigenous communities such as the Sama of Tagabaobo, revealed that CBFM is incongruous with the community's cultural practices. While there seems to be an alignment of the core goals between CBFM and the IKSP of the Sama, the objectives, focus, and processes were not necessarily aligned. CBFM was more concerned with the political issues and economic gains; the community, on the other hand, prioritized social and cultural dimensions. CBFM focused on improving the socioeconomic condition of the community, enhancing private investment, contributing economically, achieving global competitiveness, and increasing revenues and incomes of the communities and LGUs. Although the schemes provided for the efficient and effective use of the forest in a sustainable manner, they were contradictory with the community's resource extraction scheme, which leaned toward the communal sharing of resources within the integrity of the forest through a minimal utilization process.

Moreover, CBFM's operative terms such as the land tenure scheme, market capital and linkage, equity and share of proceeds, foreign funding, forest resource securitization strategy, incentives such as exemption from rentals and forest charges, assistance of environment-concerned agencies, pricing and commercialization of forest resources, livelihood and plantation projects, and contractual scheme did not embody the indigenous spirituality, values, and aspirations of the Sama people. The community promoted the sharing and subsistence use of resources, hence they were against the commercialization of tree plantation and excessive extraction of forest resources. The Sama upheld the natural replenishment process of the forest. They perceived that the CBFM's concept of forest management is incongruent with the epitome of their culture that leaned toward environmental protection and care (Cuizon 2007).

This case shows the points of contradiction or disconnection with regards to ground implementation of the CBFM. This can be a good opportunity to ensure that the policy would evolve in a manner that will meet with the aspirations of its target beneficiaries, such as the indigenous peoples. Since a large portion of the forestlands is entrusted to them, the government must rediscover a strategy that can support them without neglecting the

overall environmental and economic goals of the country. The story of the Sama community portrays the mutual relationship between humans and the environment—one that is deeply ingrained in their hearts and minds. Tested through time, the community has been successful in passing on the genuine regard for nature as reflected by the positive response of the current generation toward prioritizing the protection and conservation of their environment.

Case #2: Behind the Fragile Enterprise: Community-based Timber Utilization in Southern Philippines

The implementation of CBFM also led to the emergence of community-based timber enterprises (CBTE) as influenced by the industrialization of the forestry sector. The Ngan, Panansalan, Pagsabangan Forest Resource Development Cooperative (NPPFRDC) in Compostela, Davao de Oro (formerly known as Compostela Valley) in the Southern Philippines, was one of the earlier government experiments on the facilitation of the smooth transition from corporate timber enterprise to a community-based approach. Consistent with the goals of sustainable forestry and social justice, NPPFRDC was managed by technically competent professionals while the major policy decisions rested with the cooperative's general assembly and board of directors, with representatives from the Mandaya Mansaka community. This organization satisfied both the business functionality of the enterprise and cooperative requirements of CBFM. In 2000, the community, with government support, was certified by SmartWood for satisfying the criteria of a sustainably managed forestland (Pulhin and Ramirez 2005).

Pulhin and Ramirez (2005) concluded that the combined impacts of unstable and restrictive forest policy, weak institutional support from government, and limited alternative sources of local livelihoods curtailed the potential economic returns and other positive contributions of CBTE. For instance, the consecutive national cancellation of Resource Use Permits (RUPs) by three DENR Secretaries have greatly impaired the logging operation. Despite the accreditation from SmartWood, the absence of an enabling policy and the lack of appropriate institutional support hampered the obtainment of the expected benefits for NPPFRDC. Conversely, the accreditation became an additional cost to the enterprise since the government did not provide the necessary market mechanism. Indeed, the combination of external and internal factors increases the fragility of an enterprise.

Democratization of the forest policymaking process and the genuine devolution of forest management in favor of the local communities are crucial to making the enterprise more robust and sustainable. To achieve real livelihood benefits, the government should provide appropriate institutional support systems, including market assistance so that they can function as economically viable enterprises (Pulhin and Ramirez 2005).

NPPFRDC has a similar story with SUDECOR and PICOP. Regardless of the good start and supportive POs, what jeopardized the situation of these companies

were the contradicting policies imposed by the government. It was also observed that these policies continuously evolved depending on the vested interests of the implementers. For instance, the implementation of EO 23 or the total log ban kept the legal extractors from harvesting the forest resources and thereby encouraging illegal extractors and encroachers. As elaborated by Dahal (2006), NPPFRDC is a tangible example of a government's initiative with well-crafted and science-based law, but was not sustained because of the inconsistencies in the implementation and entangling issues along the way.

Case #3: Governance Challenges in Community-Based Forest Management in the Philippines

The Northern Negros Natural Park (NNNP) is one of the Protected Areas under the National Integrated Protected Areas System (NIPAS) Act of 1992 that depicted the intertwining problem on policy governance and environmental, social, and political aspects. Inside the NNNP are the multiple overlapping CBFM projects, Integrated Social Forestry Program (ISFP), and CBFM agreements, including the Community Stewardship Certificates (CSCs) that were awarded to individual recipients. Despite the numerous tenurial instruments, the combination of local factors hindered the achievement of an improved ecological balance of the seriously degraded forest and the enhanced socioeconomic status of both the indigenous and migrant families. In contrast with the assumption of the community, the different barangays inside the park were not homogenous, subsistence-oriented, marginalized from markets, forest-dependent, or conservation-minded. The communities were composed of groups of Ata and Bukidnon communities, and migrants. They had various socioeconomic status and little sense of community (sense of solidarity, social organization and group decision-making, and land and forest management efforts). Regardless of the established Peoples Organizations (POs), most of them were unaware of the need to have a unified decision toward a resource extraction scheme for sustainable use. Although they were aware of the illegal and destructive practices in the area, they chose to overlook these things to avoid arguments. They were also unaware of the legalities of their tenurial instruments and lacked experience in conservation and community resource management (Cagalanan 2015).

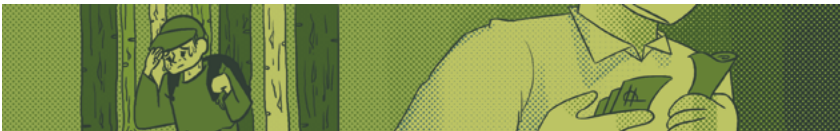
Structural factors, particularly the scale of institutions, were identified as one of the underlying problems. Conservation management varied at different levels starting from transnational funding or conservation agencies to the state, province, protected area, local government unit, municipality, barangay, people's organization, and household. This hierarchy of scales and their roles and tasks were not clearly operationalized on the ground. Challenges included limited human resource and financial support. These hampered government institutions from carrying out the intended program for the benefit of the community. The failure to empower the community led to project mentality. Similarly, the park faced numerous overlapping but

poorly integrated initiatives between offices across institutional scales and on the ground (Cagalanan 2015).

New efforts were launched in 2011: the National Greening Program of the DENR and BINHI Program under the Energy Development Corporation. Positive developments emerged and the organization in Bagong Silang was awarded as the top nursery in the region by the DENR. Likewise, they were recognized as among the top 10 CBFM POs nationwide. The positive changes were due not only to the new programs and financial support, but also because of the new chairman of the organization who was a local pastor with experience in community organizing and service (Cagalanan 2015).

The experience of NNNP is a typical CBFM case faced with entangling issues and concerns on the ground. Apart from internal problems in the community, the numerous and overlapping forestry initiatives had been thwarting one another's intended benefits for the participants. Similarly, the undefined boundaries of the laws and their entangling implementation divided the people instead of unifying them. For instance, acting under the existing NIPAS Act, IPRA Law, and EO 263 of CBFM—as well as the various rural development programs and agrarian reforms from different institutions including the LGUs, down to the barangay level—without the goal of harmonizing them will just continue to lead the future of community forestry into a limbo. But the radical change of a small organization inside the NNNP in Bagong Silang proved that community forestry offers hope to pursue forest restoration through the cumulative sustainable management efforts of the upland communities.

Glimpses of these narratives reveal the various faces of the human-environment interaction in this contemporary world. Based on these accounts, the core goals of CBFM have yet to be attained and the full intended benefits have yet to be felt by the majority of upland communities. Most of the findings from the field studies and multisectoral assessments revealed that the progress on the ground was actually incongruous with the intention of both the CBFM and Social Forestry. Reexamining CBFM based on its principles provides a general perspective on the implementation of CBFM through time.



Principle #1: Social justice and equity

Social justice and equity, as elaborated by Rebugio (1995), is the equal distribution of forest resource benefits among different sectors of society, particularly the poor. From the ownership of elite TLA holders, hectares of forestland were transferred to CBFM POs through the program. With this,

the government reflected justness in its allocation of forestlands to the local communities. Likewise, recipients of the agreements were accepted fairly based on the established criteria and procedures (Bacalla 2006). Unfortunately, the unstable policies on timber harvesting and nationwide cancellation of all CBFMAs, together with the bureaucratic issues involved in timber harvesting, thwarted the intended growth of the forestry sector. The rights that should have been given to the POs turned into responsibilities to develop and protect the forest (Pulhin, Inoue, and Enters 2007). At the local level, CBFM also struggled in achieving social equity and benefit-sharing among the members. The villages' elite composed of leaders and educated members reaped most of the benefits of CBFM at the expense of the poorer members (Dahal and Capistrano 2006).

In terms of gender roles, Table 1 shows that gender equity is not yet fully realized at the ground level based on the significant difference between the number of male and female members of the POs despite various efforts to mainstream the Gender and Development (GAD) programs.

Principle #2: Sustainable development

Consistent with the Brundtland Report in 1987, sustainable development is the idea that human societies must live and meet their needs without compromising the ability of future generations to meet their own. This principle was upheld through the proper implementation of CBFM strategies such as plantation establishment, reforestation, and agroforestry, which resulted in the increase of forest cover. Likewise, most of the POs also observed improvement in the environmental quality particularly in the water supply, soil fertility, and microclimate of the area. The PO members safeguarded the forested area and those adjacent to it even without any allowances, thus strengthening forest protection. Narratives on the commitment of these forest guards presented in the succeeding chapter prove their high regard for sustainability and protection. In contrast, the logging concessionaires who had abandoned the forests since the cancellation of the TLAs also left the roads leading to these areas, which gave way for new encroachment. The accessibility of these residual forests attracted many agents of degradation, such as the upland migrants who practiced slash-and-burn and intensive agriculture. These activities were even compounded with illegal logging despite the imposed nationwide log ban (Rebugio et al. 2016). The insufficient support from CBFM pushed even some of the PO members to engage in illegal cutting activities to support their family (Pulhin, Inoue, and Enters 2007).

Principle #3: Community participation

While early parts of CBFM implementation showed significant improvements in the condition of most of the community participants, these were just short-lived. Pulhin, Inoue, and Enters (2007) stated that once the project was finished and the funds ran out, most of the people started losing interest as

they perceive CBFM as just a project. Although there were those who received long-term technical and financial support and had greater socioeconomic gains, they were only a few compared with the whole population of CBFM.

In terms of socioeconomic development, other livelihood and enterprises that were provided aside from timber harvesting were typically ill-conceived and unsustainable. Opportunities to process agroforestry products locally were rare, such that chances to generate more income were often missed. Many LGUs failed to support and assist the CBFM POs because they did not understand their role as stipulated in EO 263 and RA 7160. For instance, LGUs could support the CBFMPs by providing farm-to-market roads, market linkages and opportunities, local water supplies and electricity, and social infrastructure (Pulhin, Inoue, and Enters 2007).

Until now, most of the forest/ecosystem services still do not have market prices, making it easier to compromise over the production of less valuable goods or services. The pressure to provide food for the growing population and the growth-centered economic model push upland dwellers to not only intensify their agriculture, but to also expand in forestlands, adding to forest degradation. Likewise, the CBFM POs who rehabilitated the forest and prevented soil erosion were not paid for their efforts despite the benefits that reached even the downstream areas (Rebugio et al. 2016).

From a political perspective, another point of departure is the deficiencies in the policy itself and its implementation, which is consistent with the findings during the Marcos martial law period. The policy was inadequately articulated and there was a gap between its stipulation and the actual implementation on the ground. Another factor is that the LGUs and the POs were given only limited devolving power in terms of functions and responsibilities which eventually led to poor governance. The poor implementation was also linked to bureaucracy, corruption, and elite-biased policies both locally and nationally, resulting from poor governance and non-supportive institutional structures. In a broader sense, this reality can be associated with the influences of the previous colonizers. For the longest time, the State had control over forest management and still believes that forest protection and development are dependent on DENR. Regardless of the devolution, the community were still subtly perceived as enemies of the forest, reflected in the frequent changes in forest policies. Hence, the program failed to develop the sense of ownership and accountability toward forest management among the CBFM POs (Dahal 2006).

The ideal and envisioned impacts of CBFM clearly did not materialize because the main legal, political, and economic orientations of the country are not conducive to the true fulfillment of social equity, sustainability and community participation. The problem is no longer about the appropriateness of policies but on the weak administration and implementation of existing laws (Hyman 1983). Weak accountability structure, poor participation and transparency in decision-making, bureaucratic apathy, corruption, elites capturing the devolved power, and inequitable resource distribution are

the reflections of the contesting powers and interest of policymakers, policy implementers, and the recipients of these policies (Dahal 2006).

Facets of CBFM in the Anthropocene

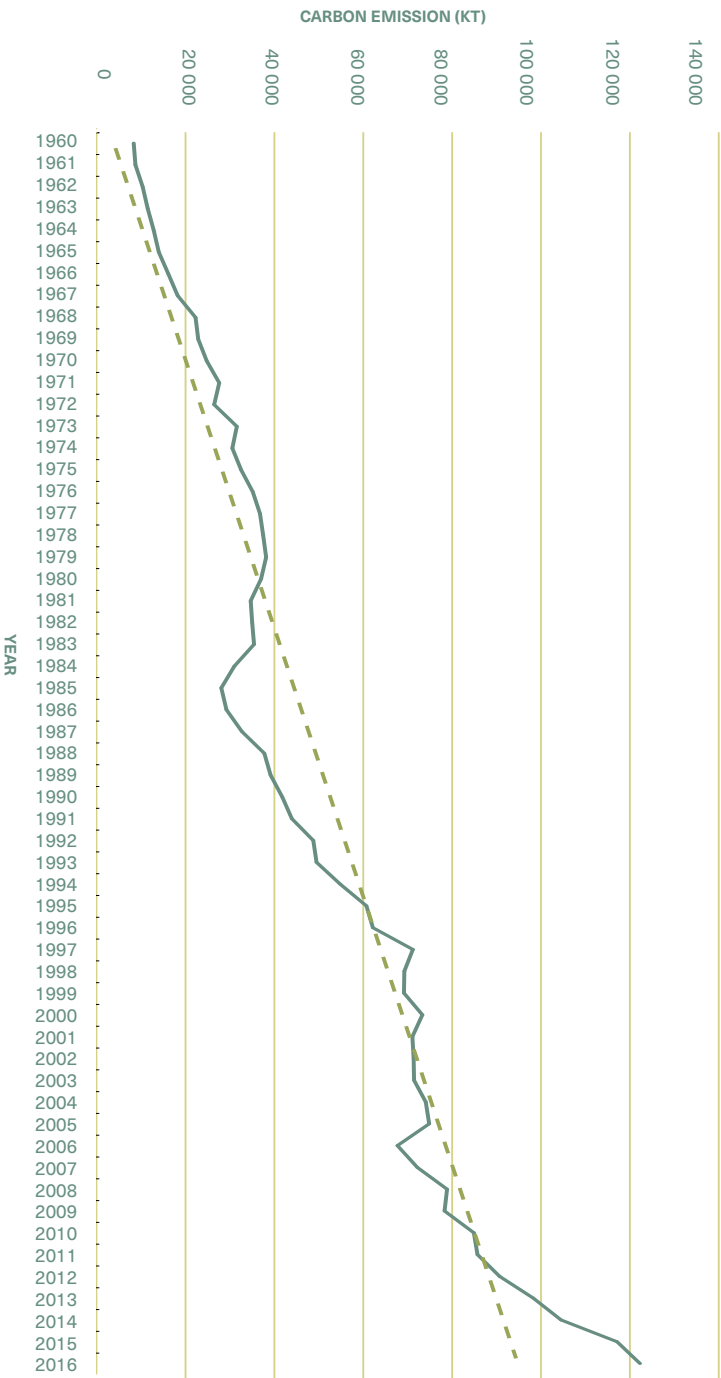
In light of the wide gap in the realized benefits of CBFM, understanding the factors that can narrow this gap means an opportunity for the country to redirect its course toward an equitable and sustainable upland community in the Anthropocene. Yet, proximate causes of its failure reveal that these problems are beyond the boundaries of the forestry sector. As such, intersection of the concerns on its implementation and the contemporary issues on the environmental, socioeconomic, health, and political areas should be defined. Apparently, these broader entangling problems depict the various facets of the Anthropocene that demand urgent and well-thought solutions.

Facet #1: Carbon emissions, climate change, and global warming

Irreversible alterations in the biogeochemical cycles of the earth are brought largely by the remarkable increase in the atmospheric carbon that started during the Industrial Revolution. A growing bottleneck on primary energy sources led to the discovery and exploitation of fossil fuels. However, the burning of fossil fuels indelibly mark the upsurge of greenhouse gases (GHGs) such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) (Steffen et al. 2011). Likewise, series of timber extractions, forest land conversions, and agricultural expansions, including the destructive kaingin in tropical countries like the Philippines, initiated the release of the long-sequestered carbon stored in the forests (Malhi et al. 2014). The estimated carbon release (Figure 4) because of forest destruction since the 1500s is 3.7 Pg (Lasco 1998), and 70 percent of this was released during the twentieth century (Lasco and Pulhin 2000). If unsustainable and wide-scale land conversion and agrarian transitions will persist, this means an increasing trajectory of atmospheric CO_2 .

Increase in the CO_2 along with other GHGs such as CH_4 and N_2O intensifies the anthropogenic climate change. The unusual rise of global temperature is strong evidence of change beyond the natural variability of the Earth's climate system (UNISDR 2008). Consequently, the increasing atmospheric CO_2 has a direct relationship with the global air and ocean temperatures. For instance, the annual mean temperature anomalies in the Philippines from 1951 to 2010 as shown in Figure 5 proves the increasing weather variabilities and extremes toward the twenty-first century. The positive anomaly reveals that for the past decades, the temperature in the Philippines was abruptly warmer than that of the baseline. Unfortunately, this situation is not an isolated case but is true to all parts of the world. Based on the recent IPCC Special Report (2018), global warming will likely rise by 1.5°C between 2030 and 2052. If the world will continue with the business as usual (BAU) scenario, worst changes in the climate system

FIGURE 4. Carbon Emission (kt) in the Philippines 1960–2016 (World Bank 2019)



will persist inflicting irreversible damage to all sectors, amplifying difficulty of existence for all the organisms, including humans, in the coming decades.

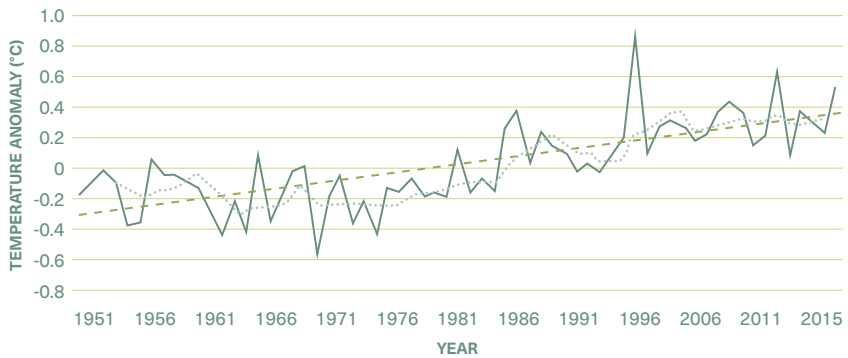


FIGURE 5. Observed annual mean temperature anomalies (1951–2015) in the Philippines based on 1971–2000 normal values (PAGASA-DOST 2018)

Facet #2: Worsening climate change impacts and disasters

The increase in the global mean temperature has also resulted in alterations of biogeochemical cycles and in the spatial extent, duration, and timing of weather and climate extremes, which also led to unprecedented extreme events (Seneviratne et al. 2012). Obvious manifestations include numerous and intensified drought incidents, heat waves, wildfires, strong typhoons, and series of flash flood events causing landslides, which led to thousands of unfortunate fatalities. Although strong typhoons are never new, Typhoon Haiyan (Yolanda) in 2013 tremendously devastated the country with almost 6,300 total deaths due to storm surges and extreme rainfall that caused flooding in most areas in Tacloban City, Philippines. Likewise, the consecutive typhoons toward the end of 2020 (Quinta, Rolly, and Ulysses) demonstrated the projected increase in the frequency and intensity of typhoons as a result of sea level rise and ocean warming brought by anthropogenic climate change (Laffoley and Baxter 2016; Santos et al. 2015; UNISDR 2008). Extreme drought and dry spells in 2015 and 2016 have impaired almost 42 percent of the country, particularly in Visayas and Mindanao. Aside from direct impacts to the agricultural sector, the extreme weather events have also affected the fisheries because of the change in the water temperature. Likewise, they have caused numerous forest fires across the country (Red Cross and IFRC 2016). Overall, the worsening climate change and global warming scenarios have exacerbated the current vulnerable condition in the upland communities. Yet, greater climate change impacts and unprecedented disasters will most likely occur as the anthropocentric view of humans persists.

Facet #3: Burgeoning population and needs

Since the global population boom after World War II, developing countries like

the Philippines have multiplied their population together with complex growing needs. As shown in Figure 6, the country's population has been increasing since 1959, with more than 100 million people at present. The increasing population can also be translated into rising demand and dependability on forest resources. Demand for necessities such as food, water, shelter, clothing, medicine, and livelihood is also expanding, as well as complex wants of the growing population. Similarly, the demand for essential ecosystem services such as climate change mitigation and adaptation, soil erosion and flood control, and carbon sequestration are also surging. Despite all the benefits from forests, they are oftentimes deliberately compromised to serve the needs of the growing population. As the population progresses toward the Anthropocene, it will continue to entail more complex sets of needs and wants, hence adding more pressure to the forest ecosystem.

Facet #4: Culture of global extractivism and commodification

From the perspective of socioeconomics, the driving forces of globalization and capitalistic economy continue to threaten the environment because of the persisting culture of global extractivism (Douai and Montalban 2009). Extractivism economy refers to the industries, actors, and financial flows, as well as to the economic, material, and social processes and outputs, associated with the globalized extraction of natural resources. Typically, this culture involves the removal of raw materials from previously colonized countries such as the Philippines, and the processing, sale, and consumption of those materials in a global economy that disproportionately benefits nations, transnational corporations, and consumers in the developed world (OHCHR 2019). Evidently, this culture calls for new demands from former colonial powers that support their own interests, including the national and local elites. From the Philippine context, it can be defined by the intensive extraction of natural resources; monocultural and large-scale agricultural, forestry, and fisheries operations; and low requirements for processing with the intention of extracting materials for export purposes (Prall 2018). Oftentimes, the country exports raw materials such as logs and mineral products like coal, copper, gold, and nickel which will then be processed in the developed country, and in return be sold in the Philippines as finished products with relatively higher prices (Delina 2021).

Moreover, the extractivism culture is akin to the issue on the commodification of the natural resources. Commodification of nature simply pertains to the conversion of natural resources into commodities (Hahn et al., 2015). As compared with the mutualistic human-environment relationship, capitalistic economy dominated that relationship and gave way to a nature-divorced regime of extraction (Delina 2021). Despite the global advocacy on sustainable development, commodification has resulted in overexploitation of forest resources—to the extent of degradation—just to meet the growing demand. During the logging years, commoditization of timber is prevalent because it can be produced in large quantities, has an established process for

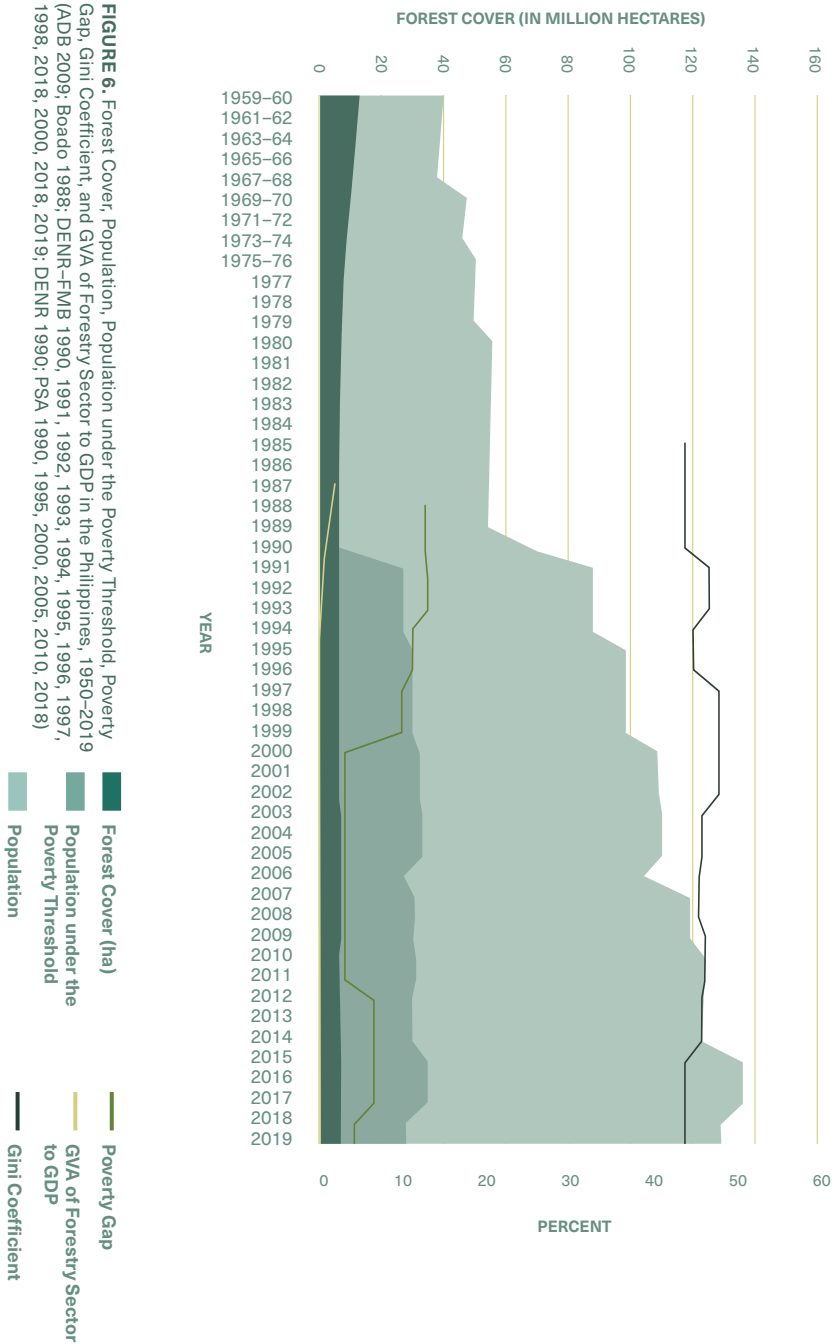
packaging and shipping, and can be used in a standard fashion by a wide range of potential end-users, regardless of location or circumstances (Caputo 2012), this promoting monocultured large-scale forest plantations that can satisfy demands at the expense of forest biodiversity.

Facet #5: Agricultural expansion and intensification

Prevalence of land conversion and intensive agriculture in the Philippines reflect one of the major contemporary problems on burgeoning population and upland poverty. According to Geist and Lambin (2002), agricultural expansion is the prominent land-use change that predominantly leads to deforestation. It takes the form of permanent cropping, cattle ranching, shifting cultivation, and colonization agriculture. At one end, agricultural expansion persists because forests are oftentimes seen as unproductive lands by migrant people, therefore converting the forest to agricultural areas poses no problem for them. Unfortunately, these migrant people continue to employ lowland farming practices, resulting in heavily degraded soils that become unproductive after two or three cropping seasons. Similarly, highland vegetable farming, practiced across the country, requires regular burning resulting in soil erosion and further degradation. Hence, farmers are forced to expand their farms toward the forest in search for more fertile land for agriculture. The increasing demand and available markets are some reasons why upland communities intensify their farming at the expense of degrading the forest with low regard for the ecological services that it provides (Carandang et al. 2012). On the other end, large-scale agro-industrial agricultural conversion is brought by multinational companies to provide for the global market demands (Malhi et al. 2014). Among these are the oil palm plantations, rubber plantations, coconut plantations, and other cash crops. However, it is clear that both forms exacerbate the underlying problems leading to widespread poverty and inequality in the uplands (Carandang et al. 2012).

Facet #6: Poverty and inequality

Poverty and inequality in the uplands reflect that wealth is inversely linked to deforestation. This issue resurfaces at the intersections of forestry and rural development. In the typical setup, the communities in the uplands are the landless lowlanders who have settled down in the public forestlands for livelihood and shelter. It also unravels the failure of macroeconomic policies to provide employment and to address poverty in the lowlands, which is the primary reason for upland migration (Carandang et al. 2012). Since 1990, the proportion of the population below the poverty threshold is almost constantly similar to the poverty gap and inequality gap measured using the Gini coefficient (Figure 6). Hence, this explains the poverty-driven deforestation which refers to the ecological marginalization of farmers who have lost their resource entitlements. Coupled with the capitalistic economy, livelihoods that are highly dependent on the forest ecosystem tend to be unsustainable



agriculture for subsistence and income generation (Geist and Lambin 2002). Likewise, increased frequency and intensity of natural disasters and climate change impacts multiply the vulnerability of the marginalized upland communities (Huntjens and Nachbar 2015).

Moreover, the inequality gap as represented by the Gini coefficient implies that there is an existing large gap in wealth distribution among the population. This demonstrates the inability of the government to trickle down tangible benefits for the growing economy of the Philippines. Thus, it demands true rural development through various government programs including CBFM. As presented in Box 3, it is evident that the absence of the mutual connections between the people and the forest promotes a subsistence and cash economy that degrades the forests and threatens its biodiversity. In light of these problems, CBFM is an attempt of by Philippine Government to address these concerns despite the negative notions of being the forest destroyers to conservation partners.

Facet #7: Land tenure and accompanied rights

Despite the numerous tenurial instruments, hindrances in the sustainable upland development persist including tenurial insecurity, overlapping rights, and unclear benefit-sharing mechanism. Figure 7 shows the various community forestry initiatives in the country that are under the umbrella program, CBFM, as the country's national strategy for social equity and sustainable upland development. As observed in the NNNP account (Box 3), in practice most of these programs overlapped with one another and caused confusion among the recipients. This reflects the lack of integration between offices across the institutional scales, particularly within the DENR as the lead agency (Cagalanan 2015). Likewise, the conflicting land ownership impairs the rights of the tenurial recipients over the trees that they have grown. Insufficient incentives and production and marketing support from the government, including the LGUs, thwart the intended benefits. Bureaucracy in both the land tenure approval and forest management, specifically on harvesting schemes and permits, add to the difficulty faced by the communities because of the unrealistic bottom-up approach in most of these community-based forestry initiatives (Chokkalingam et al. 2006). With this, it is imperative that policy interventions and programs are integrated and harmonized to bring about the desired goal of a sustainably managed forest.

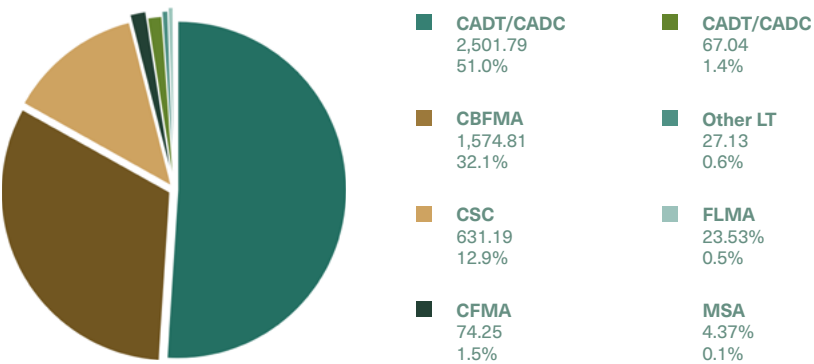


FIGURE 7. Various Types of Tenurial Instruments in Forestlands under Community-Based Forest Management: Certificate of Ancestral Domain Title (CADT)/Certificate of Ancestral Domain Claim (CADC), Certificate of Forest Stewardship Agreement (CFSA)/Certificate of Community Forest Stewardship (CCFS), Community Forest Management Agreement (CFMA), Certificate of Stewardship Contract (CSC), Forest Land Management Agreement (FLMA), Community-Based Forest Management Agreement (CBFMA), and Other Land Tenure (LT) (DENR-FMB 2007)

Facet #8: Mining industry

Apart from the mechanized logging concession areas, a large portion of the Philippine forest has been deforested and degraded because of large-scale and small-scale mining activities (Carandang et al. 2012). As the fifth most mineralized country, global and local demand for minerals has always been high since American colonization. In general, mining in the Philippines is largely driven by globalization and is typically owned by multinational corporations. According to Sonter et al. (2017), the assumption that mining only accounts for one percent of tropical deforestation is contradictory to its real impact that is almost ten times greater. The severity of the destruction, including the generated wastes and pollution brought by mining, has already been felt. Further, other civilian conflicts on tenure, resources, benefits, and even cultural concerns are usually accompanied by the establishment of mining areas. Unfortunately, the government has no clear policies yet (aside from RA 7942, the Philippine Mining Act or RA 7076, the People’s Small Scale Mining Act of 1991) which could protect the forest from illegal mining and strengthen forest rehabilitation and restoration in the degraded forest areas. Ironically, mining companies, unlike the logging concessionaires, continue to operate and expand despite the numerous evidence of their impact on forest degradation.



Facet #9: Zoonotic diseases

The global impact of the recent pandemic has resurfaced the interrelationship

of forest destruction, animals, and zoonosis. COVID-19 and the Ebola virus are examples of zoonotic diseases. These are diseases usually caused by pathogens that infect animals and are transferred to humans through zoonotic spillover, which is defined as the transmission of pathogens from animals to humans. Prior to the novel coronavirus outbreak, scientists have already warned about the consequences of the conversions on the Earth's landscape, particularly its impact on human health. Since then, more evidence has proved the correlation of forest loss and fragmentation because of its continuous encroachment and the increasing risk of animal-borne infectious diseases. The forest serves as a protective barrier for pathogens and the untapped source of medicines; therefore, the increase in its fragmentation also implies increasing vulnerability of the nearest community. In addition to that, activities such as intensive agriculture, kaingin, logging, hunting, and mining expose workers to animals, directly increasing their risk of having zoonotic diseases. With the extent of COVID-19's impact in the Philippines, policy interventions with clear implementation guidelines must be carried out for the protection and prevention of possible zoonotic outbreaks in the future (Rott 2020).

Facet #10: Political inconsistencies

The history of forest utilization, destruction, and degradation in the Philippines also reveals power relations as manifested by the enacted and implemented laws. These laws, although made in the past, have continued to shape the future. However, most of these laws need to be amended to adapt to contemporary issues that are distinct from previous problems. Many contradicting policies tend to exacerbate the current situation of the marginalized population. Despite the enacted Philippine Selective Logging System (SLS), most of the logging concessionaires have chosen the extensive and unsustainable method of timber extraction due to its promising profitability. The pressure to meet the increasing demand for timber in the international market encouraged the concessionaires to pursue easy money but short-lived economic development. Even with the existence of laws and sanctions, implementation of these laws is not observed while the culture of corruption among the government, elites, and politicians predominates the forestry sector. Unfortunately, irresponsible timber harvesting opened the already degraded forest to further destruction through intensive agriculture, kaingin, charcoal-making, and fuelwood harvesting (Vitug 1993).

The traumatic experience of forest degradation brought by unsustainable logging practices resulted in the failure to balance protection and production in relation to forest management. As observed in the recent policy direction, majority of the policies lean toward forest conservation and sustainable forest livelihoods under the Sustainable Forest Management and Community Forestry. Conflicting and shifting policies have transformed the forest industry into a sunset economy (an industry in decline, one that has passed its peak or boom periods) as observed with the decreasing trend of gross value added (GVA) of the forestry sector to Philippine GDP. From numerous logging

concessionaires that generate income for the country, the Philippines is now left with only two logging concessionaires that legally operate in Samar and Zamboanga del Norte (DENR–FMB 2019). Consistent with the experience of SUDECOR, the enactment of Executive Order No. 23, or the Moratorium on Cutting and Harvesting of Timber has negatively affected the forest industry. Further, the peculiarity of the timber industry, long gestation period, high cost, prolonged return on investment (ROI), and diminishing investment, espoused with a lack of political will and good governance, unclear policy guidelines, and historical pitfalls of extractivism, will continue to beset the potentials of the production services that forestry can provide.

The challenges in the Anthropocene open up entangling problems that are beyond the boundaries of forestry. With this, a call for an integrated approach across all the other sectors should be done. There is a need to clearly define the direction and the unifying goal of the country that will be the basis of plans and actions to be taken by the various sectors of the society. It is crucial to redirect the scattered efforts, initiatives, programs, and projects of all sectors into one main direction, hence working in synergy and complementing each other in achieving the desired shared goal. Looking at the Philippine setting, it seems like a radical change is necessary and it will require key and influential people to initiate the steps toward a brighter and secured future.

The Anthropocene is beyond colonial influence and the surrounding global system. The real main challenge is humans' behavior toward the environment. Our connection with the environment barely exists anymore—care is no longer ingrained in the hearts and minds of people, thereby making it easier to neglect existing resources. Humans' way of life is no longer committed to environmental protection and care, but driven by selfish desire for growth, development, and advancement, usually at the expense of the environment. Resources are no longer intended for the community, but for individual needs as well as business profit amid global pressures expected from each country. Evidently, behind this human-environment connection are the laws and policies that influence the evolution of their relationship. These laws and policies have the power and authority to impact the course of the Philippines. Contemporary problems that were initially identified in the environmental sector were realized as encompassing issues that involved the whole society at various levels. Different domains such as environmental, cultural, social, economic and development, political, and health must be integrated to address the concerns in this new age.

Indeed, we are now confronted with the choice to go with the business-as-usual lifestyle or to start doing simple things that can reverse the destructive impacts of the Anthropocene. With a renewed mindset, we can start making a difference, starting individually then collectively as a nation. Hopefully, the changes we make can eventually create an impact in the increasingly decimated Philippine forest landscapes by working together to minimize its damage even as we pursue the path of growth and development.



Future Trajectories

The rising concern about the Anthropocene has resulted in the global acknowledgement of the impacts of human activities to the structure and functioning of the Earth System. It is a challenge in both research and policy to provide a universally accepted strategy to achieve sustainability of the Earth despite the human-induced stresses. In the Philippines, improvements with existing laws, specifically in the implementation phase, coupled with technological advances have the potential to reverse the destructive effects of the Anthropocene.

Fourth Industrial Revolution and Development

The ingenuity of Filipinos as reflected in various research can be relied on to grow and develop as a nation while decreasing the deteriorating impacts to the environment. Investing on research and development, particularly in the forestry sector, could signal the Fourth Industrial Revolution, promising hyper-connectivity and technological breakthroughs without compromising the environment. Real-time information about the country's tropical forests can be used to better understand and analyze them. Permanent monitoring sites covering the different types of forest ecosystem can be established to gather data more effectively. The potential of the available technologies such as remote sensing, satellites, drones or aircrafts, imagery and Light Detection and Ranging (LiDAR) 3D cloud points, Geographic Information System (GIS) software, infrared and high resolution cameras, and laser scanners can be maximized to capture the dynamics of the forest in the changing environment and its influence on the adjacent ecosystems. Innovations in information and communication technologies can provide the real-time data for different 3D forest simulations and forecasting to better guide reforestation and rehabilitation initiatives. These can bring breakthroughs in forest inventories and biodiversity assessments.

Since the maturity of trees and the forests takes quite a long time, simulations and forecasting are necessary in making wise decisions and plans for present and future scenarios, thus being consistent with the goal of sustainable forest management. Certain innovations can also serve as effective tools for the management of forest plantations and proper

applications of silvicultural treatments. This, in turn, can provide proper value for ecosystem services provided by the forest and its biodiversity. Besides carbon sequestration and soil and water conservation from forest, the potential of phytoremediation using woody plants, rhizo-remediation, and green applications through microbes assistance can also be studied.

Similarly, advances in forest biotechnology can be explored through specific tree-based applications for clonal propagation, marker-aided selection and breeding, genetic engineering, genomics, and other tree improvements (Hetemäki and Mery, n.d.). Artificial intelligence and synthetic biology can also be applied in the context of forestry and natural resources. Technological advancements are also necessary to improve forest management and resource extraction, particularly in the wood-based industries. Also, the increased information about the forest and its biodiversity can help in boosting the market for non-timber forest products. These scientific and technological advancements should be wisely implemented with precaution because they are like double-edged swords—they can be used to develop the forest and other related activities, but at the same time be utilized to abuse the forest.

Multidisciplinary Research: Coupling of Natural Science and Social Science

Scientific advancement should be complemented with studies of people who will be affected by these innovations, including existing social structures. These studies can help better understand the human-environment interactions, particularly how anthropogenic activities impact the environment. They can give deeper insights about the core reasons of the Anthropocene, particularly forest destruction and degradation. The wide range of social sciences cover the understanding of growth and development, market-based decision-making, consumerism, technological development, and the array of dominating geopolitical and economic arrangements.

Theoretically, the studies can help identify the structural, institutional, and cultural factors that have influenced the agents of forest degradation. Methodologically, they can serve as empirical tests on theories and policy proposals concerning the Anthropocene. Similarly, the evolution of human behavior toward the environment can also help us understand the motives for resource management and extraction for each person. While most of the policies now are science-based, failing to appropriate these laws to the involved stakeholders and the institutional, political, economic, and cultural contexts, as well as the historical trends and global processes that surround them, could lead to inefficient and ineffective policies and programs (Rosa et al. 2015).

Emerging Topics for Future Research and Development

Cross-cutting concerns of biophysical and social sciences can lead to new pathways for research such as the expansion of agribusiness estates under the ASEAN integration in the Southeast Asian region. Discourse on biocultural resources over economic resources may encourage more people to rediscover

sustainable manner of living in harmony with nature. These emerging areas can be of interest to the new generations of scientists and engineers to become better prepared in handling the perceived future changes. Likewise, the pressing concern on zoonotic diseases as experienced globally due to the spread of COVID -19 revealed fresh insights on the coupling of environmental and medical science. Understanding these two branches of science is essential to spare and prepare the next generation for unprecedented circumstances such as the current pandemic.

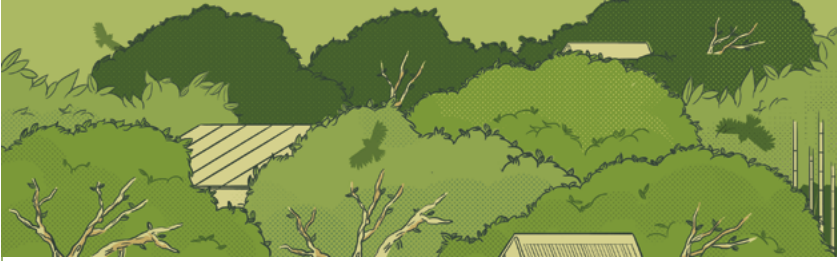
Crowdsourcing through Citizen Science

The emerging concept of “citizen science,” which encourages public participation and collaboration in scientific research can help bridge the gap between research and policy implementation. People, through citizen science, actively share and contribute to data monitoring and collection programs. Broader data sources will not just help provide accurate results for research but can also shape policies. Taking CBFM as an example, no succeeding amendment based on stakeholder consultation was made since 2004 that could have solved the problems encountered along its implementation. The voices of each people’s organization could have been heard and acknowledged to address the problem.

Policy Reforms and Trajectories

Since the problem with most of the policies lies heavily on the implementation phase, CBFM amendments must be based on what research has identified as gaps and challenges. Policy reforms should be done not only for the sake of certain legal processes but to also guide implementation, monitoring, and evaluation. At the core of this is strengthening the sustainable livelihood component of CBFM through a comprehensive package of technical, budgetary, and marketing support. Weakness of the current devolution process should also be addressed through the transfer of decision-making concerning local forest management. This could address the bureaucratic inefficiency and corruption in the forestry sector and provide stable and consistent policies aligned with the array of rights given to the POs (Dahal 2006). Additionally, enactment of a Sustainable Forest Management Act can be hastened to provide a more stable policy environment and implementation for CBFM with clear provisions on resource use rights (Ramirez, Lecciones, and Capiña 2019).

Future policy reforms should be anchored on good forest governance principles. They should install appropriate mechanisms and processes that ensure deeper and meaningful partnership with key actors to encourage sharing and transfer of knowledge, skills, lessons learned, and resources. Clear roles and accountability, active participation, transparency, and equity in sharing of costs and benefits among the key stakeholders, including the involved government agencies, should also be ensured. The passage of responsive policies, including increased budget allocation for research and development, is also essential to support the growing community.



Conclusion

The current environmental problems speak clearly of the new geologic age called the Anthropocene. Since colonization, humans have become the major force that induces environmental change to the point of altering biogeochemical cycles. The country's tragic history of forest degradation depicts the severity of human activities in pursuit of growth and development. Through the establishment of forest institutions and enactment of policies, exploitation of the natural resources, particularly timber, was legalized. Thankfully, the worsening forest denudation pushed the shift toward community forestry and forest conservation. The enactment of EO 263 establishing CBFM is the culmination of all the learnings from past experiences. It is built upon the principles of social equity, sustainability, and community participation. At first, significant changes have been observed in the CBFM POs, but in the long run the program has become contradictory with its initial intentions. Studies revealed that regardless of CBFM and the sound laws and policies supporting it, still the main legal, political, and economic orientations of the country are not conducive for fulfilling sustainable forest management. Weak accountability structure, poor community participation and transparency in decision-making, bureaucratic apathy, corruption, elites capturing the devolved power, and inequitable resource distribution reflected the contesting powers and interest of policymakers, policy implementers, and the recipient of these policies (Hyman 1983; Dahal 2006).

We realized that every individual, particularly our behavior toward the environment, heavily impacts the Anthropocene. Arguably, all these are just the superficial concerns that mirror the root problem—the evolution of the human-environment relationship. Factors such as industrialization, globalization, and commoditization created an environment that affected the perception and behavior of man toward his environment. Human connection with the environment now barely exists, making it easier to neglect or compromise the environment. Seemingly, these changes can, at some point, be observed in everyone. Further, these contemporary problems in this new epoch, such as the concerns on climate change and global warming, have seemingly become apparent beyond the boundaries of the forestry sector.

The good news is that there are ways to address this problem. Through responsive policies and programs anchored on good governance principles, it is still possible to generate positive and beneficial changes if they will be strategically set, implemented, monitored, evaluated, and regularly updated to cope with the changes in society and the environment. An integrated approach that harmonizes the efforts from various sectors at all levels is a critical factor that must be put in place. This can be complemented with the wise use of science and technology, including the integration of indigenous knowledge and practices toward a better understanding of how humans can live in harmony with nature. A strong will to change behaviors is also a crucial factor, since it is not just quantitative changes in the environment that count, but more so the individual decisions that are strongly tied with the institutional, political, economic, and cultural contexts bound also to the broad historical and global trends. That decision lies freely in each one of us, and hopefully, collectively as a nation, we can make changes that can help protect the Earth through responsible use and stewardship as we pursue a more sustainable path to growth and development.

Notes

1. The Neolithic Age or the New Stone Age is the new period that started after the Pleistocene (Ice Age). The appearance of new working tools, including polished stone tools that differ from the Paleolithic Age (Old Stone Age), suggested the beginning of this period. It was during this time that humans started cultivating their land for food (Peralta and NCCA 2000).
2. The Holocene (meaning wholly recent) pertains to the most recent interval of Earth's history, including the present day, and is the quaternary period in the Cenozoic era. It began approximately 2.5 million years ago after the Pleistocene. It was during this age that *Homo sapiens* were distributed globally and signaled the start of the Neolithic Age (Callicott 2017; Pillans and Gibbard 2012).
3. The period before the Middle Ages
4. This type of cultivation is usually done at the start of the dry season and begins with the clearing of the forest by slashing down the vegetation. Debris are dried and burned before the start of the wet season. Tubers like gabi may be planted afterward while other crops are planted after the first rain to aid in the softening of the soil. After periods of planting, the plot will be fallowed for about ten years to recover the fertility of the soil through natural regeneration. During the fallow period, another area will be cleared and cultivated, and the same cycle repeats. Modern studies prove that traditional kaingin is more efficient than wet agriculture in terms of yield and cultivation effort (Peralta 2000).
5. Age of Discovery refers to the time when western countries were motivated to explore the world for the purpose of power, territorial expansion, and control over natural resources of the eastern countries (Heffner 1918).

6. The Regalian Doctrine vested the Spanish crown with the ownership of all lands, including the forest and forestlands (Buendia 1993).
7. The galleon trade is one of the Spanish economic policies that heralded the start of the globalized world economy. Two galleon ships sailed from the port of Manila, Philippines to Acapulco, Mexico containing products from Asia such as precious stones, ivory, cotton, silk, jade, iron, sandalwood, and porcelain, and then came back to Manila with the American silver (Amano et al. 2020).
8. The mercantile era is based on the economic doctrine that the stocks of gold and silver are the country's measurement of wealth and power. This doctrine compelled the Spanish colonizers to extract enormous amount of gold and silver from the Philippine forest. Extracted gold and silver was traded with other western countries such as the Americas through the galleon trade (Abueg 2017).
9. The encomienda system was a policy attempting to reconcile the needs of elites because of labor shortage and the need for laborers for protection.
10. The western concept of forest management mainly relies on the scientific knowledge that promotes the mechanization on the forestry sector, primarily with the goal of maximizing the economic productivity of the forest area (Top 2003).
11. Forestry Administrative Order No. 14 permits residents of the municipalities to cut, collect, and remove forest products without any forest charges.
12. Extensive kaingin greatly differs from the sustainable kaingin system practiced by the IPs. This new practice originated from the concepts of sedentary agriculture. After the loss of the primary forest due to timber extraction, upland farmers practiced the slash-and-burn concept in these degraded forests, which are now dominated with second-growth forest. Some of the farmers retained the practice of crop rotation, short fallow periods, or the burning of fallow; however, this new kaingin system is no longer grounded by the principle of harmony and sustainability, but production and demand.
13. Great Acceleration is the period after World War II notable for the sharp increase of the rate of human activities which significantly alter the global environment, such as the sudden population boom, increasing consumption of petroleum, rise in atmospheric greenhouse gas concentrations, and land conversion, among others.
14. Philippine mahogany is the trade name for the softer members of the dipterocarp family and is divided into two groups: dark-red and light-red lauan. Dark-red Philippine varieties are composed of the red lauan: tanguile (*Shorea polysperma*), tiaong (*S. ovate*), true red lauan (*S. negronensis*) and *S. teysmanniana*. Light-red Philippine mahogany includes the white lauan: real white lauan (*S. contorta*), almon (*S. almon*), *S. eximia*, bagtikan (*Parashorea spp.*), manggasinoro (*S. assamica*), *Dacryodes incurvata*, kalunti (*S. kalunti*), and mayapis (*S. palosapis*) (Tamesis 1948).

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