

Assessment of the forest administration of Mount Makiling Forest Reserve (MMFR) and Mindoro State University forest reserve (MFR): A comparative analysis

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ABSTRACT

The study was conducted to compare the forest management of the two forest reserves under the leadership of the universities. The first forest reserve assessed was the Mount Makiling Forest Reserve (MMFR) - managed by the University of the Philippines Los Baños (UPLB) and the second is the Mindoro State University Forest Reserve (MFR) – managed by the Mindoro State University (MSU). The study used descriptive and comparative analysis that assessed and compared the components of forest governance with a specific focus on forest administration and management of the two forest reserves. The two forest reserves show huge differences in governance that made them divisible from one another. The MMFR has established facilities, policies and frameworks, cooperative stakeholders, knowledgeable managers, and financial stability. This is the result of the hard work through participatory strategies involving the key players that reinforced the protection of Mount Makiling by the UPLB. While, the MFR is the opposite of MMFR in terms of governance, facilities and policy formulation including the institutional framework. The result of this is massive because it weakens the management system and will largely impact the security of the forest. Though UPLB has exerted efforts in the management of Mount Makiling, still they encountered issues that need to be resolved. On the other hand, MinSU Forest Reserve has a lot of things to do in terms of forest management and administration. Thus, this paper enumerated recommendations to improve forest resource management and administration for MMFR and MFR.

Keywords: Mount Makiling Forest Reserve, Mindoro State University Forest Reserve, forest governance, UPLB

1. INTRODUCTION

The Philippines once was very rich in forest resources, but with time it was heavily

exploited. By 1950s the Philippines became the first to be exploited for commercial logging after which it became the major exporter of tropical

logs in Southeast Asia [1]. The exploitation ranges from an estimated decline of 12 million hectares in 1960 to a current level of about 5.7 million hectares (which includes less than 1 million hectares of virgin forest largely confined to very steep and inaccessible areas) [2].

The Philippines has created laws and policies for forest resource use and environmental conservation, despite sound laws, illegal logging still exists [3] and even assassination of forest workers is still happening [4]. Implementation of the Philippine forest laws has been struggling and incomplete owing to insufficient enforcement, limited staffing, social and political pressures, and alleged corruption. Some laws are already old written and need revision to harmonize with the existing mandate of the government in addressing forest resources issues. Moreover, the administration of existing laws must be improved and strengthened [1].

Good governance is fundamental to achieving positive and sustained development outcomes in the forestry sector, including the efficiency of resource management, equitable distribution of benefits, increased contribution to economic growth and environmental services [5]. One of the measures to visualize good governance is an effective forest administration where the process of change in areas such as organizational structures, decentralization, personnel management, public finance, results-based management, regulatory reforms for improved governance is being implemented and secured. Not all forests received the same treatment by the administration. There are forest reserves in which administration has been established while some are still lacking it.

There are factors to be considered in order to understand the problems of forest administration that lead to different administration and institutional gaps.

The need for a comprehensive analysis to diagnose, assess and monitor forest governance is widely recognized among forest stakeholders. The quality of governance often determines whether forest resources are used efficiently, sustainably and equitably, and whether countries achieve forest-related development goals. The poor forest governance has some serious ripple effects, often reflecting the overall weakness in governance of a country [6]. To improve the forest governance a systematic approach is required to identifying areas of weakness, monitoring results, continuing adaptation, learning to ensure progress devising and implementing suitable responses. A generally accepted systematic theoretical framework would promote efforts in and across countries to enhance forest governance.

In the last twenty years, practitioners have realized that management is often a weak link over combating inefficient use of forests. Technical knowledge on its own is inadequate and no natural forest management; protected area; plantation, or agroforestry project can succeed if the resources are poorly managed [7]. The concept of "forest governance" is often difficult to hold because many laws, policies, actions, rules, and interactions shape the forests. This also makes it difficult to be clear about what the major governance impediments are and what to do about them [8]. Thus, an essential first step towards improving forest

governance is to define its most relevant core elements in a coherent framework.

Forest illegality occurs when forest products are harvested, shipped, stored, bought or sold, or when forests are cleared or otherwise destroyed, in violation of sub-national, national or international law. Corruption and poor governance provide an atmosphere that perpetuates illegal behavior. Inconsistent forestry policies, unrealistic legislation, and inadequate institutional capacity to enforce legislation contribute to illegal logging. Some of the general causes of forest illegality include lack of knowledge about forest law and high demand for timber on the domestic as well as export markets [9].

In case of illegality, law enforcement activates legally qualified authorities to determine non-compliance with rules and norms to and prosecute violators. It may involve patrols/surveillance of detect criminal activity, the investigation of crimes, and the apprehension and prosecution of offenders [10]. Law enforcement, therefore, is one of the main tools for reducing illegal practices in the forest sector.

Forest governance is very challenging as it has a unique web of stakeholders, institutions, and valuable resources that deliver a variety of products and services, often resulting in a highly complex conflict of interests. The common conflict between stakeholders is for land and products, and between institutions for authority [11]. This causes overuse, degradation and deforestation of resources. At the same time, forestry worldwide remains a low priority sector with little or no political influence. Forest

resource institutions have a very complex relationship-giving rise to a complex governance structure. Forest governance is not an independent process within a given landscape; rather it is part of a system. The framework is the country's overall network of government, which is highly complex. As a result, the evaluation of forest governance is also difficult.

The Filipino forestry resources have gradually declined over the years due to a number of insufficient and poorly implemented forestry policies that have led to the rapid degradation of old-growth timber and residual forests, as well as other non-timber forest resources [12]. The availability of only short-term timber licenses in the past has discouraged long-term investment in forest production and dampened efforts by the private sector to contribute to forest regeneration⁷. Rehabilitation of forests by natural and artificial means, initiated by various sectors, has never met the rate of forest destruction. It was estimated in 1934 that some 17 million hectares of land in the country had been forested [13]. Traditional forestry policy and planning that regulated the management of forests in the country was typically oriented towards resource exploitation. Forest exploitation has been seen as a convenient source of income, power and political leverage.

Access to use timber resources was primarily the result of timber licensing agreements, which were essentially for large-scale operations. The pattern of industrial forestry led to logging booms in the 1960s and 1970s, which directly and indirectly contributed to the rapid decline of the country's natural forests [14-15]. Directly, due to the use of high lead land, which destroyed

many forest areas subject to logging, and indirectly due to the opening up of many forest areas to upland agriculture through access roads constructed by loggers. Between the 1960s and the early 1980s, the country's forestry industry was a very successful and liberal sector [15]. Logging was then one of the backbones of the economy providing direct jobs for more than 400,000 people and livelihood opportunities for more than 2 million people. It also provided the country with valuable foreign exchange, as some 50 to 75% of log production was exported during that time. Highest exports were registered at the end of the 1970s when approximately 7.5 to 7.9 million cum of raw logs were shipped abroad annually [15]. Total exports of wood products during the same time amounted to almost 10 million cum per year. It accounted for almost 10% of the country's total export earnings. The country's log exports have been branded "Philippine Mahogany Lumber," a global brand for high quality Filipino wood that has been much sought-after on the international market [16]. The nation was then a net exporter of timber and forest products.

In order to visualize some administrative problems of forest reserves in the Philippines, a rapid assessment on Mount Makiling Forest Reserve (MMFR) in Laguna and Mindoro State University (MinSU) Forest Reserve (MFR) in Oriental Mindoro has been carried out. The study used secondary and primary data through consolidation of reports about the areas and a key informant interview to suffice the data that are not searchable through the internet and any written documents. A comparative analysis approach was used to understand and describe gaps in governance particularly on policies and

administration between the two forest reserves – the MMFR and MFR. The result will be the basis in recommending policies and actions to fill whatever administrative and other governance gaps are revealed to improve forest administration towards sustained and equitable forest resource use.

2. METHOD AND MATERIAL

2.1. Research Design

The study used the data gathering instruments and interviews for the assessment. The study was conducted during from August to December 2019 at the University of the Philippines Los Baños for Mt. Makiling Forest Reserve and Mindoro State College of Agriculture and Technology for MinSU Forest Reserve.

2.2. Data collection

The study used both primary and secondary data collection. The secondary data were collected using online desk research, available assessment reports and books from UPLB and MinSU library. The primary data were collected using Key Informant Interview (KII). The data that are not available from any written reports were collected using KII. The participants from the KII in MinSU were the forest ranger, the director for production and director for security. Participant from the KII in MMFR was a staff from the office of Mt. Makiling Forest Reserve.

2.3. Data Analysis

The study used descriptive-comparative analysis to assess and compare the components of forest governance with specific focus on forest administration and management of the

two forest reserves – the MMFR and MFR. The comparative analysis was processed and visualized using matrix, maps and narrative statement.

3. RESULTS AND DISCUSSION

3.1. Physical Characteristics of Mt. Makiling and MinSU Forest Reserves

Mt. Makiling Forest Reserve

Mount Makiling is an inactive volcano with the forest reserve is at the upper part of Mount Makiling and straddles the political boundary of the provinces of Laguna and Batangas. The forest reserve is primarily used as a forest and agroforest area. Mount Makiling Forest Reserve is one of the valuable tropical forest ecosystem resources in the Philippines for education, scientific research, extension, development and management (figure 1) [17]. It was established as a forest reserve as early as 1910 through Philippine Commission Act 1989 and Proclamation No. 106. The mountain was also proclaimed as a national park under the Bureau of Forestry by virtue of proclamation No. 552. The MMFR provides continuous life-support services to the communities because of its richness in ecosystem services, from water to diversity of flora and fauna. Mount Makiling was named the 33rd ASEAN Heritage Park on October 3, 2013 [18].

3.2. MinSU Forest Reserve

Presidential Proclamation No. 260 established the school reservation of then MINAS, (now MinSU virtue of Republic Act No. 8007), with a total land area of 3,680 hectares. The area

has been a subject of and dispute by farmers settlers in the area who claimed tilling the area even before the issuance of Proclamation 260. In 1972, 600 has been distributed to farmer settlers. This was followed by the distribution of 2,388 hectares under Comprehensive Agrarian Reform Program (CARP) [19]. The rest of the settlers who invaded the different areas near the College were subjected to legal action resulting in a court order for demolition. However, the demolition order was not implemented. To date only 700 hectares is left to MinSU, Subsequent presidential proclamations decreased the land area of the College to only 700 hectares, but still the area is subject to land ownership conflict.

In March 1994, the governor of Oriental Mindoro recommended that Department of Agrarian Reform (DAR) conduct an actual survey of the land to be retained by MinSU and distribute the remaining land to actual farmer occupants at three hectares maximum limit for each beneficiary as required by CARP [19]. Later on, a second order was given to the College to retain a minimum area of 200 hectares for educational purposes

In 2001, tripartite meetings and agreements between DAR, MinSU and PMS were made to settle the issue on the land dispute particularly focusing on the 372- and 328-hectares settlers and MinSU sharing of the remaining 700 hectares reservation area. The dispute remains unsettled as of this date. Of the 700 hectares, the main and annex campus (Victorias Milling Corporation) occupy fifty (50) hectares. Aside from the 50-hectare main and annex campus, 2 hectares is devoted to instruction, 1 hectare for research and extension while 63.3 hectares for

Table 1. Physical Features of the MMFR and MFR

Forest Attributes	Mount Makiling Forest Reserve (MMFR)	MinSU Forest Reserve (MFR)
a. Geographical Location	14.10N, 121.15E	13.09N, 121.11E
b. Land Area	4, 244.37 ha	100 ha (21 ha were utilized and given attention)
c. Peak	1, 090 meters above sea level	
d. Political Boundaries	Cover the boundaries of Laguna and Batangas. The buffer zone are within the municipalities of Sto. Tomas Batangas, Bay, Los Baños, Calauan and Calamba City	MinSU forest reserve is located in Victoria, the sixth largest municipality of Oriental Mindoro in terms of land area (6.55% of the total land area), located thirtyfour (34) kilometers south of Calapan City, the capital. It is bounded on the north by the municipality of Naujan, on the south by the municipality of Socorro, on the east by the municipality of Pola and on the west by the municipality of Sablayan, Occidental Mindoro. It has a total land area of 100 hectares but only few areas were managed.
e. Landscape	Mossy forest, natural forest, mixed forest, agroforestry areas	Secondary forest: Class A and B Agroforestry area – Trees intercropped with fruit trees, and vegetables, developing with existing fruit bearing trees, Durian, lanzones, rambutan
f. Land Use	The MMFR serves as: Academic and scientific studies; Agricultural Areas Agroforestry Industrial Parks Geothermal Industrial Complex	Academic and Scientific Studies Agroforestry
g. Other features	The MMFR is also deemed as inactive volcano	Contains dipterocarp trees and fruit bearing trees such lansones, rambutan and durian, wildlife and different species of trees.

Source: Lapitan, P.G. (2018) *Science-based Management and Upland Community Development in the Philippines*.

production. 404-hectares is currently occupied by settlers and 179.3 hectares includes the roads, employees' village and non-productive areas.

Rice (Palay) and corn are the two dominant crops of the area. The rest are planted with fruit trees, coconut, vegetables, ornamental plants, minor forest plants are used as grazing or pasture lands. The Land Use Plan of MinSU is currently in the process of updating.

1.22 hectares of the school reservation along the valley of Alcate River was reserved as Forest Management Unit National Greening Program

site. The area is presently open with scattered unproductive orchard trees (figure 2). The remaining forested area of MinSU covering 28.04 hectares which is currently covered with dense secondary forest with a mix of Dipterocarp and Molave Forest is also reserved as FMU MinSU Forest Reserve. The area serves as habitat for wildlife and a major water source for MinSU. The forest functions as a natural barrier against typhoons coming from the east. The whole MinSU Reservation area, including the original areas (totaling 3,680 hectares) is part of the Mag-asawang Tubig Watershed. It is but important to reserve critical areas as FMU

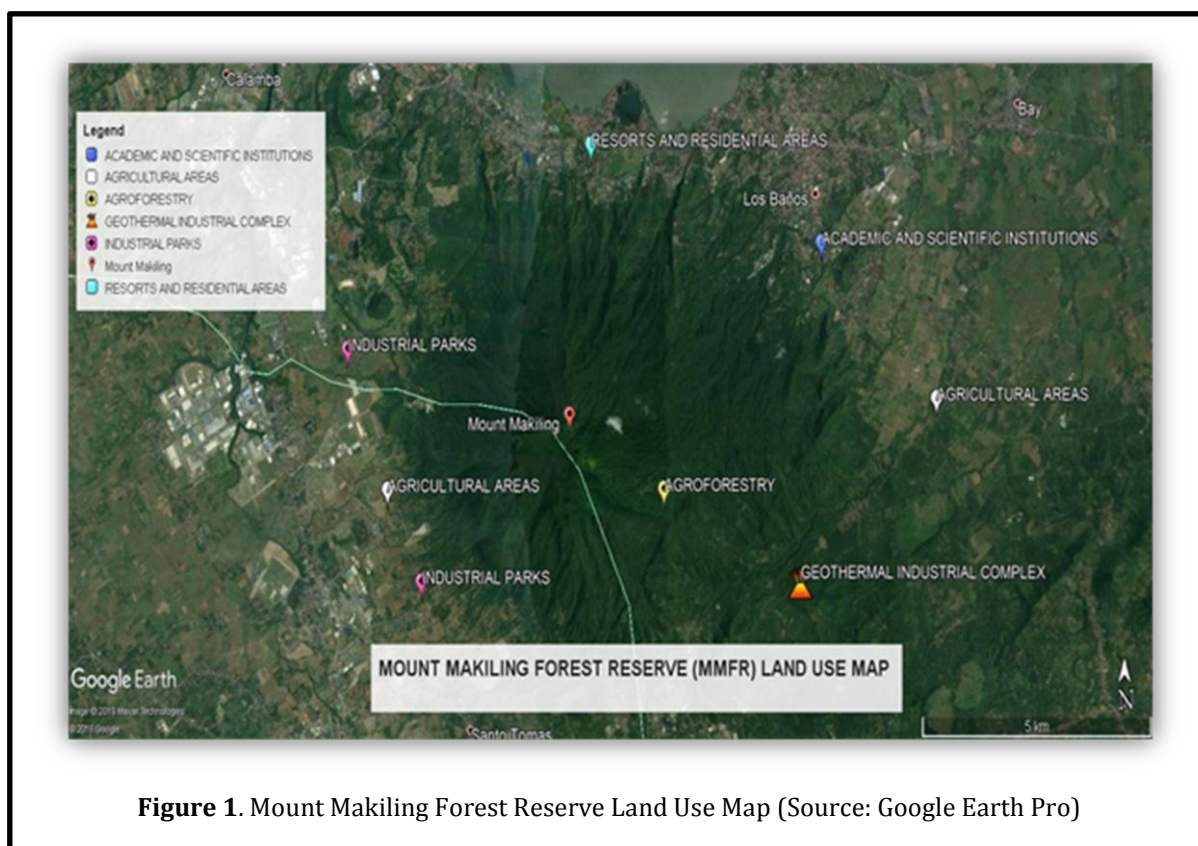


Figure 1. Mount Makiling Forest Reserve Land Use Map (Source: Google Earth Pro)

forest reserve for preservation and rehabilitation, [20] (CLUP-Victoria, 2015-2024) (table 1).

3.3. Policies, Laws and Regulations

Mount Makiling Forest Reserve (MMFR)

The Republic Act 6967 enacted in 1989 and effective until now declares that the University of the Philippines Los Baños (UPLB) has the full jurisdiction and administration of the MMFR. The UPLB utilize the mountain as training laboratory for scientific and technical knowledge preservation, conservation and forest development. This also includes the welfare of the fauna, flora and natural resources [21]. The institution also mandated to preserve watershed areas in the forest of Makiling for the development of hydro-geothermal power together with the National Power Corporation

(NPC). The agreement includes not to endanger the forest reserve and remains in its purpose as training laboratory.

Until April 29, 2008, the forest reserve administrator, UPLB, was further reaffirmed by Republic Act 9500 under Section 22 (b) that the MMFR will only be used for the purpose of laboratory activities and confirmed the landholdings of UP to the forest was declared. The UPLB chancellor Ruben L. Villareal issued an Executive Order to aid the implementation of RA 6967 for the purpose of conservation, development and management of MMFR. Thus, the guidelines were partially implemented because of the discrepancy in the accreditation mechanism. The selection criteria, process and standards including public consultation and budgetary requirements were not formulated. Then on March 3, 1995, the UPLB Chancellor issued Memorandum 29,

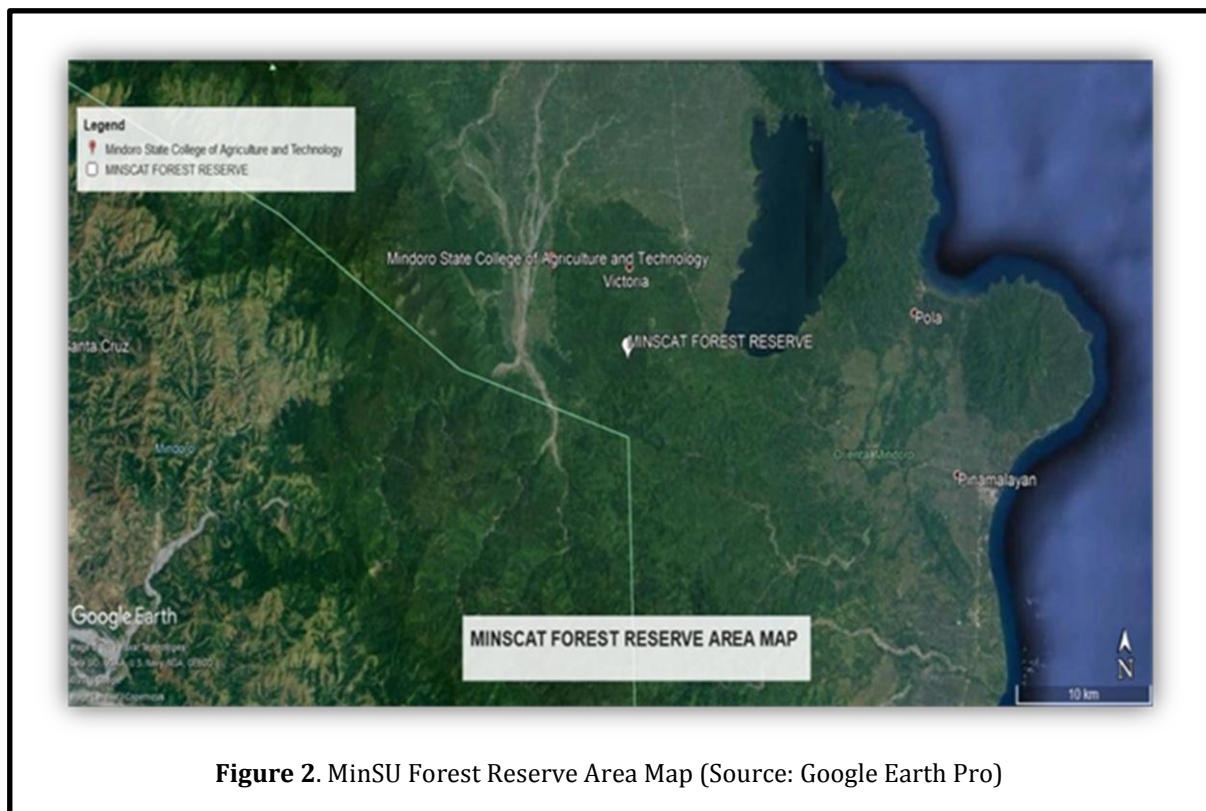


Figure 2. MinSU Forest Reserve Area Map (Source: Google Earth Pro)

temporarily stopping the construction of new structures and concreting of nipa huts or other structures. After the said memorandum another one reinforces the previous ruling of the prohibition of the construction of the concrete structures know as Memorandum Order 80 issued in 2000.

Different policies and guidelines have surface to provide a sound management regarding MMFR. The Executive Order (EO) 349 was approved by Fidel V. Ramos in June 1996 that adopts the MMFR and Laguna De Bay Master Plan. This identify the programs, resources needed and schedules of implementation. It is a series of macro level plans of MMRF stakeholders [22].

On the other hand, to reinforce the protection of MMFR, Proclamation No. 1257 was issued again by President Fidel V. Ramos on June 20, 1998, designating the area from the first 18 percent slope towards the boundary as buffer zone [22].

This buffer zone was undertaken by DENR and concerned LGUs, providing technical assistance and coordination functions. In the level of the institutional administration, the UP Board of Regents passed a resolution on June 25, 1998, to create the Makiling Center for Mountain Ecosystem or MCME.

Until such time, the MMFR was declared as National Heritage Parks and Reserves by the ASEAN Declaration in 1984 [23]. The agreement highlights the setting up of regional conservation and management action. And by this virtue the MMFR was declared as ASEAN Heritage Park in October 2013.

Then, Republic Act 3523 on Collection of Additional Forest Charges and Forest Protection of MMFR, charges and collects the amount of ten centavos on each cubic meter of timber cut and removed from any public forest and forest reserve for commercial purposes. The collected

Table 2. Milestone of the MMFR in the process of Policy Making

Year	Policies	Brief Description
1910	Proclamation No. 106 by Governor General W. Cameron Forbes	This is to regulate the use of forest and forest reserves in the Philippines
1920	Proclaimed" as Makiling National Botanic Gardens" by Francis B. Harrison	Placed on the jurisdiction of the then Bureau of Forestry primary for scientific studies on plants and animals
1933	The MMFR was renamed as " Makiling National Park" Proclamation No. 552 issued by Governor General Theodore Roosevelt Jr.	The policy intends to turn over the MMFR to the Bureau of Forestry. This serves as game refuge and enjoyment of the people.
1937	Proclamation No. 214 issued by Manuel L. Quezon	Addition of the Calamba State Block to the Makiling National Park
1952	Republic Act 826	To promote the effectual planning, development, maintenance and conservation of all national parks, monuments and wildlife.
1956	The UPLB took the long process of the jurisdiction of the Makiling Forest	
1960	Proclamation No. 692 bt President Carlos P. Garcia	Administration of the Makiling National Park was transferred from the commission of Parks and Wildlife to UPLB
1963	Republic Act 3521 by President Diosdado Macapagal	The Makiling National Park was disestablished and then ceded, transferred and conveyed to UPLB.
1987	Executive Order 224	Complete jurisdiction, control and administration of the Makiling Forest Reserve were once again vested to UPLB
1988	Signed by NPC and UPLB	The Makiling Watershed Administration and Management were transferred to UPLB
1989-1990	Republic Act 6967 issued by President Corazon C. Aquino.	This is primarily as a training laboratory for the advancement of scientific and technical knowledge on the preservation, conservation and development of forest, flora and fauna, and natural resources.
1993	Executive Order 121 issued President Fidel V. Ramos	The Presidential Commission on Mount Makiling Reserve Area and Laguna De Bay Region was created.
1996	Order 349 issued on June 18, 1996 by President Fidel V. Ramos	The Master Plan for MMFR and Laguna de Bay Region was adopted
1998	Proclamation No. 1257	Designated 18 percent slope toward the boundary of MMFR as buffer zone area to provide an added layer of protection to the resource.

Source: Lapitan, P.G. (2018). *Science-based Management and Upland Community Development in the Philippines*.

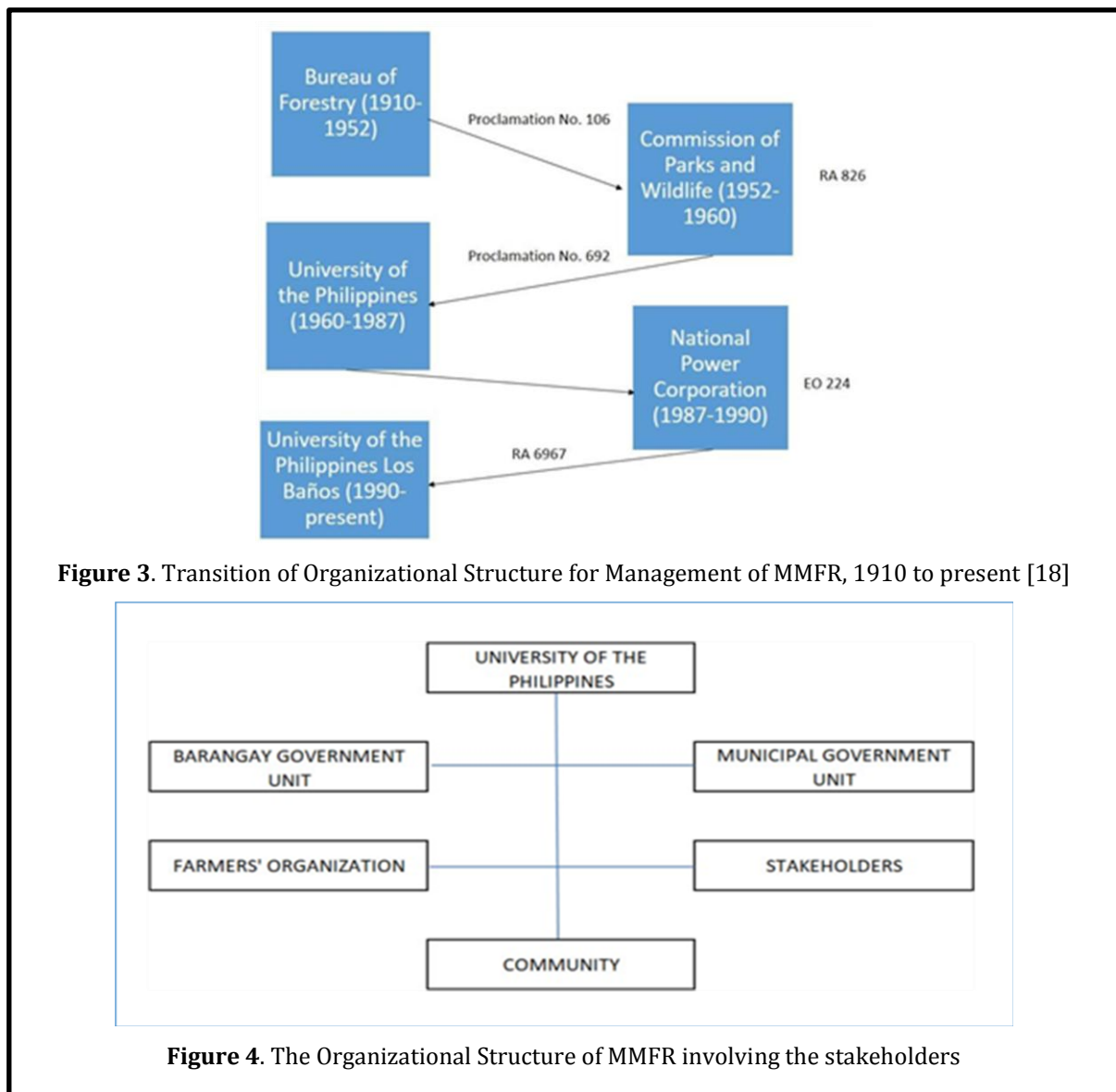
amount will be used for the implementation of the objectives of the MMFR to support the law enforcement.

The table 2 shows the milestone of the MMFR in the process of policy making after the World War I until to the current period. The policy is

more focus to the academic, research and extension purposes in forestry.

3.4. MinSU Forest Reserve (MFR)

The MinSU Forest Reserve (MFR) relies only from the national policies regarding forestry management and protection. Based from the Key Informant interview, the MFR has no local



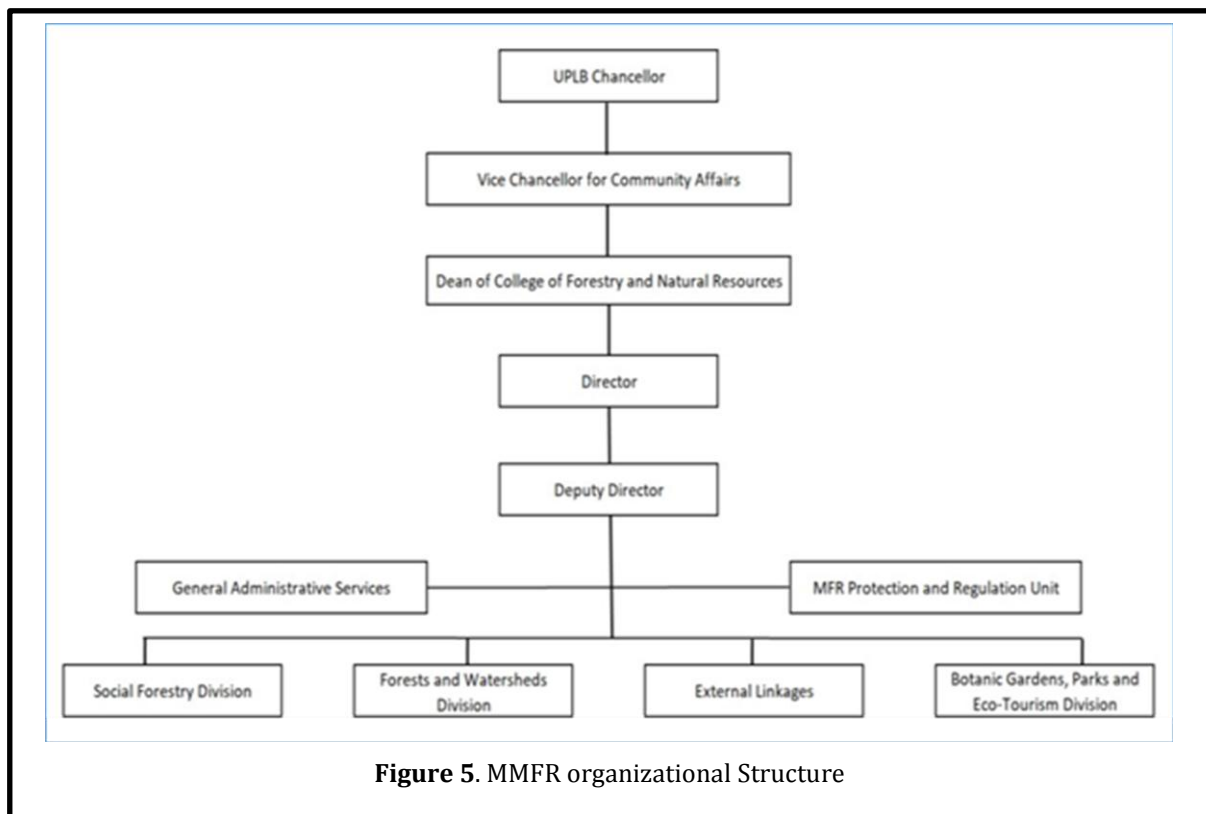
policies to provide sound management system for the said forest. The only paper the MFR has is the Contract of Services of the Forest Ranger/Guard stating his duties and responsibilities [24]. The activities within the forest reserve are based from the outright plan arise from the director of production and director of security through the forest ranger who sometimes initiates planting trees or other activities and doing his duties based from what is stated in the contract of services issued by the president of MinSU. Some interventions are

coordinated and assisted with DENR, DAR and DA.

3.5. Participation of Stakeholders and Participatory Approach

Mount Makiling Forest Reserve

The first community-based initiative in the MMFR is the Dampalit Watershed implemented from April 2006 to April 2008 in the Dampalit-Molawin part of the mountain, this were also applied to Cambatoc watershed and other areas of the Makiling. The Participatory



Upland Development Program empowers and build the capacities of the farmer – communities in the implementation of the actions to attain productive and sustainable management. The watershed is part of the Molawin-Dampalit sub-watershed in the northeastern part of MMRF. It has an elevation of 60-1,090 meters above sea-level and an area of 604.27 hectares. The MMFR is composed of mossy forest, natural forest, mixed forest, agroforestry areas.

Considering the fact that the farmers (96 %) of Dampalit practiced upland farming which is unfortunately located near the watershed; in moderately rolling (31%) to steep sloping areas (59 percent). The fertility of the soil in the upland was reduced because of the inorganic fertilizer applied by the farmers. On the other hand, the application of pesticides is considered by the farmers to eradicate the pest of their crops.

Having the scenario, the situation constantly degrades soil quality, inhibit biodiversity and destroy the watershed by removing the vegetation in the MMFR (upland). In order to address the continuing degradation, the Local Government Unit, UPLB and the stakeholders together with the community used the participatory approach to solve the issue. Eventually, this gain the commitment of the Samahang Magsasaka sa Mataas na Lupa ng Lalakay sa Bundok Makiling Inc. (SAMALUP). This organization carried programs for the farming activities in the community of Lalakay. The participatory upland development in Dampalit helps the SAMALUP to develop their organizational and technical skills and planning activities. The event resulted to successful training of the farmers and establishment of agroforestry techniques that will not damage the integrity of the watershed and the forest of Dampalit. On the other hand, they provide

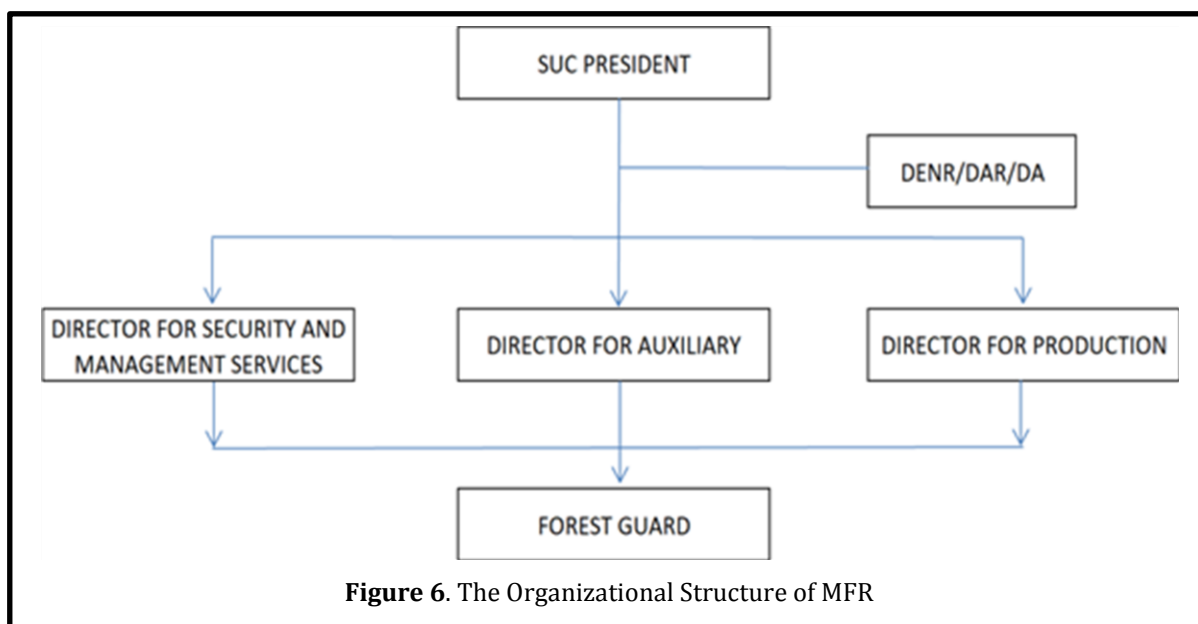


Figure 6. The Organizational Structure of MFR

alternative livelihood as a back-up support for the members in times of shortage.

The most significant contribution of the program was the institutionalization of the participatory protection and conservation of the Dampalit watershed in MMFR. The partnership of UPLB, BGU-Lalakay and SAMALUP motivate the farmers to employ productive and sustainable farming without compromising the natural condition of the Makiling forest. In general manner, the effectiveness of the participatory approach used by the said institution and organization became instrumental to change the farming perspective of the community, not to harm the forest as they operate. Sound management and effective farming methodology were observed and continually develop within the Dampalit to reflect their collaboration.

The protection of the Dampalit Watershed is just one of so many successful implementations of the participatory and science-based management of the MMFR. These approaches made the community, stakeholders and other

institutions to become resilient as they depend to the resources of the forest. The MMFR managers efficiently incorporate the advancement in scientific knowledge in forestry and allied fields resulting to the development and conservation of the forest. The components of these approaches are livelihood for forest-dependent people, silviculture/ecosystem management, people's participation, holistic management, formal management plan, ecotourism/reaction, research, education protection from encroachment consultative approach and political endorsement. It can be understood that the proficiency of the community and stakeholders' participation were effective in managing the MMFR. The issues and concerns were fully addressed and the resolution materialized reinforcing the welfare of the community, stakeholders and the MMFR.

3.6. MinSU Forest Reserve

The MinSU Forest Reserve has no consistent stakeholders and even individuals or group that will maintain and utilize the forest. The Mindoro State College of Agriculture and Technology,

Table 3. Policy, Legal, Institutional and Regulatory Frameworks

<i>Component</i>	<i>MMFR</i>	<i>MFR</i>	<i>Note</i>
3.1 FOREST RELATED POLICIES AND LAWS			
Existence of policies, laws and regulations governing forest use and management	√		MFR needs to establish this concern
Clarity and coherence of policies, laws and regulations governing forest use and management	√		MFR needs to establish this concern
Forest-related laws and regulations facilitate effective and efficient implementation and avoid overreaching and unnecessary requirements	√		MFR needs to establish this concern
Policies and laws support adaptive forest management	√		MFR needs to establish this concern
Consistency of forest laws with relevant international commitments and obligations	√		MFR needs to establish this concern
3.2. INSTITUTIONAL FRAMEWORKS			
The forest-related mandates of national agencies are clear and mutually supportive	√	√	MFR needs to improve this concern
The forest-related mandates of national and subnational governments are clear and mutually supportive	√	√	MFR needs to improve this concern
Adequacy, predictability and stability of forest agency budgets and organizational resources	√		MFR needs to establish this concern
Availability and adequacy of information, technology, tools and organizational resources for the pursuit of agency mandates	√		MFR needs to establish this concern

Victoria is the only identified authorized manager of the forest. Thus, there are no other appropriate papers that will strengthen their claim, only the fact this ecosystem is part of their property.

The identified consumers of the forest are those informal settlers living near the area. However, they are not authorized to go beyond because the property belongs to the school even their settlements.

3.7. Implementation of Policy and Institutional Framework

Mount Makiling Forest Reserve

The MMFR becomes resilient because of the effective management employed to possible issues that will compromise the resources. There is a need to address the issues that will cause conflict to forest reserve. In order to address such issues, the MMFR provide a firm

policies and guidelines including the framework where the actions must dwell.

The Mount Makiling unfortunately were stressed by different factors that deplete its natural resources. The most common conflict in the forest reserve and watershed are the unsustainable farming practices, timber poaching and over exploitation of non-timber forest resources. Forest dependent communities will always attempt to extract the natural resources if not being halted. These scenarios bring challenges to the managers of MMFR, thus, implement the policy and the guiding framework for the effective management. The policy and its existing framework will provide an efficient forest protection system. The policy involves monitoring together with the other sectors adopting the principle of “the more, the better”. The MMFR policy requires the

Table 4. Planning and Decision-Making Processes

Component	MMFR	MFR	Note
4.1. STAKEHOLDER CAPACITY AND ACTION			
Presence of strong, independent civil society organizations, including non-governmental monitors and watchdog organizations	√		MFR needs to establish this concern
Capacity of civil society, indigenous peoples, and small and medium enterprises to participate and engage in forest-related planning, decision-making and implementation	√		There is a potential of initiating participatory activity, however, this kind of activity is not existing in MFR.
Adoption and implementation of voluntary environmental and social standards and safeguards by private sector actors, including banks operating in the forest sector	√		MFR needs to establish this concern
Governments encourage corporate entities and businesses operating in the forest sector to comply with recommended international codes of conduct and standards and safeguards	√		MFR needs to establish this concern

participation of stakeholders that can be tapped to help the manning stations.

In addition, the institutional framework managed the activities in the boundary of the reserve. The MMFR is a type of forest reserve near the alienable and disposable lands. The adverse effect of this situation to the forest reserve is the rapid development of the neighboring locals and stakeholders converting the area near the MMFR in to subdivisions, industrial parks and resorts. There are farmers that practice kaingin farming to earn money for their living. Problem in sharing land boundaries with private land owner has become critical. To delineate the boundaries the UPLB placed corner monuments along MMFR. These will prevent the encroachment of the people inside the MMFR, provide solid and physical structure prohibiting illegal activities and ease the monitoring activities in MMFR. This action was supported by the creation of policy regarding the buffer zone.

On the other hand, the MMFR developed a management and information system to be

reliable at all cost. Through the science-based management an inventory of the resources of the reserve and developing information were employed. The inventory system was properly designed and planned for sustainable management. The methodologies that materialize this development or inventory are plot, aerial photography and ground surveys. The current approach in the development of the institutional aspect of the MMFR is the participatory approach through community-based management.

Meanwhile, they provide equitable cost and benefit sharing considering that forest reserve requires resources such as money, manpower, equipment and logistics. The UPLB seek the generosity of the other stakeholders to contribute anything for MMFR from this group of people. Revenues are obtained through the use of the direct and direct use of the forest natural resources. They asked fees for the gathering of forest products like firewood and conduct activities like shooting by commercial movie producers, selling seeds, seedlings and other related services. On the other hand, other

stakeholders such resort's owner ear a lot because their visitors pay for the hot water coming from the spring of the MMFR. The management and institutional foundation strengthened by the policies both local and national help the forest reserve to develop an administration and sustainable financing mechanism.

The key players in solving the problems that the MMFR have encountered over the years are confronted by the stakeholders and managers of the MMFR together with the community. The institutionalization of the participatory approach provides a spectrum of methodologies that involved the idea and perception of the beneficiaries in solving problems, decision and policy making. This harnessed the participation

Table 5. Implementation, Enforcement and Compliance

Component	MMFR	MFR	Note
5.1. ADMINISTRATION OF FOREST RESOURCES			
Adequacy of staff capacity and effectiveness of agencies tasked with forest administration	√		MFR needs to establish this concern
Quality and effectiveness of information and data management systems	√		MFR needs to establish this concern
Existence of monitoring and evaluation and the results are accessible	√		MFR needs to establish this concern
Monitoring and evaluation results are clearly incorporated into forest management planning	√		MFR needs to establish this concern
Existence of collection, sharing and redistribution of forest taxes, royalties, charges and rents.	√		MFR needs to establish this concern
Existence of on-the-ground management forests that follow adopted policies, laws and plans	√		MFR needs to establish this concern
5.2 FOREST LAW ENFORCEMENT			
Existence of application of penalties for breaches of forest laws and regulations	√		MFR needs to establish this concern
Existence of division of jurisdictional authority and responsibility for forest law enforcement	√		MFR needs to establish this concern
Existence measures and tools to prevent forest crimes	√		MFR needs to establish this concern
Existence of incentives for officers and agencies to enforce forest laws, including investigation and prosecution	√		MFR needs to establish this concern while MMFR gives incentives through giving travel allowance only.
Existence of law enforcement agencies to suppress, detect and prevent forest-related crimes and illegal activities	√		MFR needs to establish this concern while the MMFR receives minor support only or as needs arises, this component needs improvement for MMFR (See in Administration Gaps for the detail)
Existence of tools, instruments and information to enforce laws	√		MFR need to establish this concern
Capacity and willingness of the judiciary and law enforcement agencies to deal with cases of forest crime effectively	√		MFR need to establish this concern Not really effective because no permanent lawyer
Courts and arbitrators are accessible, fair, honest and independent; work in a timely manner and are affordable; and deliver enforceable outcomes	√		MFR need to establish this concern

5.3 ADMINISTRATION OF LAND TENURE AND PROPERTY RIGHTS			
Comprehensiveness and accuracy of documentation and accessibility of information related to forest tenure and rights.	√		MFR need to establish this concern
Existence of implementation of processes and mechanisms for resolving disputes and conflicts over tenure and rights.	√		MFR need to establish this concern
Existence of compensation mechanisms when rights are extinguished	√		MFR need to establish this concern
Existence of measures and mechanisms to ensure the tenure security of forest owners and rights holders.	√		MFR need to establish this concern
5.4 COOPERATION AND COORDINATION			
Existence of coordination and cooperation between national and subnational governments on forest-related activities	√		MFR need to improve this concern
Existence of coordination and cooperation within and among national agencies with forest-related mandates	√		MFR need to improve this concern
Existence of cooperation and coordination of national law enforcement agencies, including police and customs, in forest law enforcement at different levels and across agencies	√		MFR is not consistent with the coordination with the authority because of poor management system
Existence to which government agencies (land, minerals, agriculture, transportation, communication, environmental protection, finance, etc.) coordinate and cooperate with forest agencies concerning forests.	√		MFR need to improve this concern
Existence of application of human rights, labor, safety, environmental and other relevant laws in forest activities.	√		MFR need to improve this concern
Existence of forest-relevant international commitments	√		MFR need to establish this concern
Existence of cross-border cooperation in the management of common forest resources and in other forest-related international activities	√		MFR need to establish this concern
Existence of cross-border cooperation in law enforcement to combat illegal trade in forest products	√		MFR need to establish this concern
5.5 MEASURES TO ADDRESS CORRUPTION			
Existence of forest-related procurement rules in the public sector	√		MFR need to establish this concern
Existence of standards of conduct for civil servants, political appointees and elected officials.	√		MFR need to establish this concern
Existence of private sector participation in efforts to address corruption, including adoption of codes of conduct and ensuring transparency of payments	√		MFR need to establish this concern
Existence of channels for reporting corruption and whistle blower protection	√		MFR need to establish this concern Not applicable
Existence and follow-up on internal controls and internal and external audits	√		MFR need to establish this concern
Existence of systems for forest revenue collection, expenditure, budgeting, accounting, redistribution and audit	√		MFR need to establish this concern

of the stakeholders and established partnership to resolve issues, collaborating from the different levels of the society.

3.8. MinSU Forest Reserve

Since, there are no local policies specific for the forest reserve of MinSU they just relied the management of issues and concerns on the national policies related to forest reserve,

Table 6. Summary of Recommendations

Forest management	MMFR	MFR
Forest legal and policy framework	Update of the forest legal and policy framework.	The MFR must pursue to create local policies and framework for forest protection and resource use. Improve its forest legal and policy framework and create an organizational structure approved by the academic officers, to administer forest reserve.
Forest strategies and plans	Provide new trend for forest strategies and plans that will be applicable for the possible future conflict	Establish forest strategies and plans for MFR
Forest monitoring	Provide advance equipment to monitor the condition and security of the MMFR	Improve the forest monitoring program of MFR
Forest management practices	There should be a consistent review of forest management practices	Establish a forest management practices
Forest law enforcement	Consistently monitor the security of MMFR from exploiters	Formulate a local policy that will enhance the law enforcement; Establish office and staff
Forest tenure		
Forest ownership and use rights	Review the territorial boundaries of the MMFR every 10 years	Establish forest ownership and use rights
Tenure dispute resolution	Improve tenure dispute resolution to become more specific with the terms	Establish a tenure dispute resolution
State forest ownership Concession allocation	The MMFR should be more specific in their terms with the concessioner	Organize the management system of the MFR for possible concession allocation
Land Use		
Land use planning	The land use plan of the MMFR should be reviewed for updates	Provide a specific land use plan intended for the MFR.
Land Use Plan Implementation	Review the loopholes of land use implementation of MMFR	Improve the land use plan of the MFR with a specific term
Forest Classification	Update the forest master plan where the forest classification is cited	Formulate the master plan of the MFR

protected areas and general environmental exploitation laws. However, at least the institution protects the forest through coordination to DENR and DAR to deploy forest ranger inside the forest reserve. They are guarding the area for five days a week. The forest ranger reports any suspicious activities and operation that happens in the forest. Reforestation programs, educational, experimental activities and other initiatives of MinSU and the forest ranger are allowed and being instituted in the MFR.

3.9. The Organizational Structure of MMFR and MFR

The MMFR

The organizational structure of Mount Makiling Forest Reserve transpire through a series of management before it was fully hand over to the University of the Philippines Los Baños, Laguna. As shown in the table it was managed by the Bureau of Forestry during 1910 to 1952 through Proclamation No. 106 through Gov-Gen. W. Cameron Forbes. The MMFR was established by putting boundaries that will delineate public

forest and forest reserve. It was set aside for the purpose of forest school and silviculture.

On the other hand, RA 826 declared that MMFR belong to Commission of Parks and Wildlife. During the transition the MMFR produced efficient planning, development and conservation program. Thus, after the institution managed the area, the University of the Philippines started working out to get the jurisdiction and rights of the mount Makiling by means of Proclamation No. 692. Nonetheless, the National Power Corporation through Cory

Aquino issued an Executive Order to take care of the MMFR. The purpose is to utilize the energy that will be harnessed from the forest. This becomes the major development of energy of the country. Then President Corazon Aquino vested the full control and management of the MMFR to the University of the Philippines through Republic Act 6967. After the transfer, the UPLB started to establish an effective management for the forest reserve.

Based on Figure 4, through RA 6967 the MMFR was hand over to UPLB considering they are the manager of the said ecosystem. In the process, the UPLB involve the Barangay Government Unit and Local Government Unit in the development process. The development plan and program are mainstreamed to the Farmers Organization and stakeholders for assistance and implementation. The community becomes part of the development plan usually it was related to conservation and proper utilization of the forest. This also includes the prohibition and enhancement of the activities that improve forest administration.

Figure 5 shows the organizational structure of MMFR, according to the study conducted by Lapitan, et al. 2018, the structure appears undermanned at the bottom levels which the agency faces constraints when it comes to protection, conservation, and development. The organizational structure is low and limited compared to the gravity of task for the protection and managing of the whole mountain.

3.10. *The MFR*

The MinSU Forest Reserve has no appropriate proclamation or Republic Act that will uplift its institutional and administration level. There is no existing approved structure that will manifest forest resource management in MFR. However, since the college provided environmental services for the forest reserve within the level of the institution, they considered that the College President represents MinSU, an academic institution, as the deciding head which well-coordinated by the Department of Environment and Natural Resources (DENR), Department of Agrarian Reform, Department of Agriculture and other related agencies. Then under the College President is the Director for Security and Management Services, the Director for Auxiliary and the Director for Production who is in-charge of the Agroforestry projects in the area. The forest guard is responsible for securing the forest reserve from exploiters and other illegal activities [24]. The president may directly order the forest guard or through the directors for any concern on regarding the forest. As of this moment, this is the observed managerial structure that functions to protect and manage the MFR.

Functions of the Forest Guard

- a) Patrols forest reservation of the college to detect and prevent illegal occupation, illegal removal and destruction of timber and other forest products;
- b) Conducts compass/perimeter survey of area illegally occupied;
- c) Accosts suspicious person and reports unusual happening and incidents and maintains order within vicinity;
- d) Reports forest violators and prepares proper reports and complaints against them;
- e) Accompanies and assists DENR representatives in the inspection of logged-over areas, if there's any;
- f) Prepares and submits required reports;
- g) Does related works as assigned by the President or his authorized representatives such as the directors.

Comparison on the existence of Policy, Legal and Institutional Frameworks, Planning and Decision Making and Implementation, Enforcement and Compliance

Based from the Framework for assessing and monitoring forest governance by FAO, Table 3-5 show the assessment of two forest reserves on Policy, Legal and Institutional Frameworks, Planning and Decision-Making Processes, and Implementation, Enforcement and Compliance. The assessment was limited to identifying the components if existing or not by answering corresponding to its component a yes if existing and no if not existing. The quality of enforcement and implementation was not measured in this assessment. Different

components were assessed through Key Informant Interviews and review of current and previous studies on Mount Makiling Forest Reserve.

3.11. The Administration Gaps

Mount Makiling Forest Reserve (MMFR)

The only gap that could only arise in the near future that will affect the management of the MMFR is the urbanization of the area near the Makiling. The security, conservation and preservation of the forest reserve will be at stake. When total urbanization occurs developers might obtain provision regarding the different policies and law implemented in the MMFR. Such example, is the buffer zone, they might push through to go beyond the territories of the forest

reserve. The negative feedback of development in general like soil, air and water pollution will eventually affect the MMFR.

The support of law enforcement agencies to suppress, detect and prevent forest-related crimes and illegal activities support is minor only. They support only as needs arises or if there is critical situation. There are no permanent personnel assigned, no special detail, unlike before, there was a police support and detailed in MMFR. It was removed when the MMFR was put into a special law. Furthermore, previously the forest guards are allowed to bring gun so they can apprehend, but today the forest guards assigned to conduct surveillance are not allowed to bring gun because they were just appointed as forest technician not for guarding, hence, they are not authorized to

bring gun. Their responsibility of the technician is to monitor only and request for the police officer, the office will file the case.

There are also confusions in the implementation of law in MMFR, the mandate of the office is to partner with the upland farmers in implementing programs for them not to engage in any illegal activities, and hence, sometimes they caught doing illegal activities. Illegal operations are not avoidable in the area. Surveillance is not being done for 24 hours, it is being done for only 8 hours without Saturdays and Sundays, except checkpoints and monitoring, but they have also day offs and not shifts and no overtimes, so there is really lack of manpower to monitors and conduce surveillance and apprehension all the time. That is why illegal activities in the area are still unavoidable.

Another problem for the protection of MMFR is the lack of vehicles to be used during monitoring and surveillance. It is ideal for each forest guard to have their own patrol bikes because the area is too wide. There are 16 entry points in Mt. Makiling and the forest guards have to go around with it. It is very difficult to conduct monitoring and surveillance without a patrol bike. Another problem that the office is facing, there is no permanent lawyer. If there are cases filed it has to pass on the paralegal and it makes the process very slow.

At the moment, there are 18 existing forest guards, yet, there are only 2 vehicles, jeepney and pick up car, so the tendency is to have conflicts in using the vehicles. There is also financial shortage in the office, they are

dependent to the MOOE allocated by the UPLB and income generated from the entrances, permits and conduct of studies, shootings, and sale of seedlings. MOOE is not enough to purchase facilities and equipment.

They are able to purchase some facilities from the external projects through the factory surrounding the Mt. Makiling and the as a member ASEAN heritage park, they also given support on technologies and strategies on how to manage as a heritage park.

3.12. Mindoro State University (MinSU) Forest Reserve (MMR)

Forest administration in MFR is weak, it cannot be compared to what the Mt. Makiling Forest Reserve has been accomplished. There are many lacking components in the MFR that need to be established and improved based from the assessment. Many intervention and initiations should be carried out to strengthen its position and be recognized as forest reserve. There are no organized administrative officers that will manage the area and the stakeholders, no mission and vision, no master plan to be followed. The MFR relies only on the national policies and guidelines, there is no localize policies that will support and be the basis for an effective protection and sustainable management of the forest. There are no identified stakeholders who can support and help in forest protection and management, only the academic institution of MinSU has its own way of managing and utilizing the forest. There are no proper facilities that will reinforce the area as laboratory exercises, other academic purposes, resource utilization, conservation and

protection. The forest guard is not licensed as forest officer, his salary is very low yet his life is always threatened by some illegal activities in the area. There is no concrete and specific land use plan for the forest reserve that can be followed by the decision makers. Boiling them down will summarize that all these problems will be pointed to a very weak forest administration, non-prioritization, non-inclusion to the academic plans, lack of administrative organization and lack of local policies and frameworks that will strengthen the conservation and sustainable management of the forest.

4. CONCLUSION

Based on the result of the collected data, the two forest reserves show huge difference in governance that made them divisible from one another. The MMFR has established facilities, policies and framework, cooperative stakeholders, knowledgeable manager and financial stability. This is the result of the hard work through participatory strategies involving the key players that will reinforce the protection of Mount Makiling.

On the other hand, the MFR is the opposite of MMFR in terms of governance, facilities and policy formulation including the institutional framework. The result of this is massive because it weakens the management system and will largely impact the security of the forest.

5. RECOMMENDATIONS

Based from the result of the assessment, this paper arrives in the following recommendations

For the MMFR, in order to have an effective protection of the MMFR, there must be a memorandum of agreement (MOA) between the agency managing the MMFR (UPLB) and the four (4) LGUs surrounding it to have a multi-spectral committee. Then after the composition, an Implementing Rules and Regulations (IRR) must be composed. The IRR should compose policies on how to improve an effective MMFR protection and management. For example, the Barangay Tanod could be a deputized officer to conduct monitoring and surveillance in their designated areas. They will be capacitated through capacity building trainings on paralegal and the rules and regulation on how to apprehend, the different protocols. This can help a lot in solving some illegal activities in the area.

There must be a permanent lawyer with high compensation to attract good lawyers to apply. An item must be created in assigned in the office of Makiling Center for Mountain Ecosystems. There must be a police power to authorize forest guards to owe and bring guns during surveillance and operations. Have special police detailed in each area based on the standard number of police per hectare.

For MinSU Forest Reserve the overall recommendation for MinSU forest reserve is to create the lacking and improve some existing components of governance from Policy, Legal, Institutional and Regulatory Frameworks, Implementation, Enforcement and Compliance, and Planning and Decision-Making Processes.

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7. CONFLICT OF INTEREST

The authors have declared that there is no conflict of interest.

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NA

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