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EVALUATING THE EFFECTIVENESS OF FOREST MANAGEMENT PRACTIVES IN THE PHILIPPINES: A CONTENT ANALYSIS OF THE NATIONAL GREENING PROGRAM

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This is to certify that:

I. The special problem comprises only my original work towards the MENR except were indicated in the Preface.

II. Due acknowledgment has been made in the text of all other material used.

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RUEN A. BALMORES
Name

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Abstract

Through the utilization of best practices and management plans, the Philippines has long proved its dedication to sustainable forest management. But are the upland forests of the Philippines being appropriately managed? A study by the Commission on Audit (2019), the Philippines' Forest cover was lost at a staggering rate of 60%. Because of this alarming decline, the government created various forest management plans to address forest loss and degradation. The National Greening Program (NGP) was an intervention that the government implemented in 2011 to reinforce its commitment to sustainable forest management. Despite the conception of the NGP, there were reports of unsuccessful implementation of its reforestation activities on ground level. To evaluate the success of the NGP, this paper aims to assess the effectiveness of the National Greening Program, focusing on the accomplishments of its reforestation activities. A qualitative content analysis of textual data from available open-access journal articles and publications between 2011 and 2023 was utilized. The instrumentation used the coding scheme of validated textual data from journal articles and publications during the last ten years, focusing on the National Greening Program's accomplishments as a reforestation approach. The evaluation of NGP's accomplishments is important to understand how well the NGP's goals are being met within the program. It also identifies the best forest management practices that were employed to achieve reforestation goals. Furthermore, suggestions are made as to how NGP best practices can improve the program and attain sustainable forest management in general.

Keywords: National Greening Program, Forestry best management practices, Content analysis

I. INTRODUCTION

A. Overview

The earth's land mass covers the majority of the earth's surface. It covers 31% of the entire land area, trailing only the sea surface which covers 69% (N. Sonnichsen, 2022). In 2020, approximately 4.06 billion hectares were remaining, compared to the 4.24 billion hectares recorded in 1990. (N. Sonnichsen, 2022). Today's forests all over the world are under severe threat, putting at risk the ecosystem services and benefits the forests provide to humans and animals. According to Greenpeace (2023), these threats come from agriculture, illegal logging, mining, road construction, and hydroelectric plants to name a few. Geister and Lambin (2014) provided a more profound cause which was grouped into socio-demographic and cultural factors, economic market and technological factors, policy-institutional and governance factors, and Biophysical factors. The authors said that these groupings and the combination of direct and indirect deforestation drivers manifest the complexities of inter-relationships of factors occurring in different areas of the world.

In the Philippines, a substantial portion of its forests has declined dramatically over the last three decades aggravating existing problems of diminishing forest resources and ecological imbalance (Bautista, The Forestry crisis in the Philippines: nature, causes and issues, 2007). Walpole (2011) also stated that the Philippines is one of the most critically deforested countries in the region, with a substantial percentage of loss happening in the past 40 years. COA (2019) reported that 60% of the forest cover was lost between 1934 to 2010. This was confirmed by the Department of Environment and Natural Resources (DENR, 1990), showing evidence that the forest cover had declined from seventeen million hectares in 1934 to about

6.69 million hectares of forest left in 1990. In 2020, DENR reported an estimated 7.22 million hectares of forest cover (FMB, Philippine Forest at a Glance, 2022 ed.) remains. COA (2019) said that these decreases in forest cover were due to the low survival rate of plant species planted, ranging from 20 to 50% survival rate. Way below the standard survival rate of 85% set by DENR (DENR, 1990). A study by Global Forest Watch using GIS and remote sensing, showed how extensive degradation in the Philippines' forests was. Because of the tremendous deforestation that occurred in the past and continues to occur today, several government organizations and agencies attempted to control forest loss and degradation by establishing forestry restoration initiatives.

Walpole (2011) affirmed that the Philippines is paying a high price for the destruction of its forests and many of the issues happening in the country can be directly attributed to deforestation. According to the author, issues of food insecurity in the country are due to soil erosion, which depletes nutrients and low crop yield. He added that in many provinces, at least 50% of the topsoil has been lost, and 70% of all croplands are vulnerable to erosion. Furthermore, aside from food insecurity, the country also faces water insecurity. This is because of degraded and poorly managed watersheds. More than 57% of major watersheds are critically denuded, which means loss of water infiltration and slow recharging of water tables. Cities like Metro Manila, Cebu, Davao, and Baguio are constantly facing water shortages (Walpole, 2021)

The following are listings of the Philippines' efforts to combat deforestation throughout the previous years.

Figure 1.1 Noteworthy events in the historical accounts of Reforestation in the Philippines

Pre-20th Century

a. Indigenous people in the Philippines used a variety of forest management techniques, including shifting agriculture and selective logging, to maintain the ecological balance of their forests.

Colonial Period (16th to 20th Century Period)

a. During Spanish and American colonial control, large-scale logging and deforestation occurred to support economic activities such as shipbuilding and farming. However, certain conservation efforts, such as the establishment of forest reserves, began during this time.
b. In the 1900s, scientific forestry practices were introduced, and the Bureau of Forestry was established, to regulate logging, promote restoration, and manage forest resources sustainably. It is during this time that the mindset of the people is more on exploiting natural resources for economic gain, rather than implementing comprehensive reforestation programs.
c. 1910, the establishment of Forester's training school in Los Banos Laguna.
d. 1916, the Bureau of Forestry was created
e. It wasn't until the 20th century that more systematic reforestation efforts were initiated by the Philippine government.

The 1970s to 1980s

a. INTEGRATED SOCIAL FORESTRY PROGRAM (ISFP), launched in the 1970s aimed to involve local communities in forest management and conservation efforts. It promoted community-based forestry projects, such as agroforestry, and watershed management, to address rural poverty and environmental degradation.
b. The NATIONAL GREENING PROGRAM was initiated in the late 1970s, with a focus on large-scale reforestation and afforestation activities. It aims at rehabilitating degraded forest lands, protecting watersheds, and promoting sustainable forest management practices.
c. PROTECTED AREA MANAGEMENT BOARD (PAMB), during this period, the government established the PAMB to oversee the management and conservation of protected areas, including national parks, wildlife sanctuaries, and marine reserves. This board also implemented measures to prevent illegal logging, encroachment, and unsustainable resource extraction within protected areas.
d. COMMUNITY-BASED RESTORATION PROJECT

The 1990

a. The Philippines has adopted international agreements such as the United Nations Framework Convention on Climate Change (UNFCCC) and the Convention on Biological Diversity (CBD), which emphasize the importance of forest protection and restoration for biodiversity and climate change.
a. COMMUNITY-BASED FOREST MANAGEMENT (CBFM), building on the Integrated Social Forestry Program (ISFP), the government aimed to empower local communities to manage and conserve forest resources sustainably through collaborative arrangements with government agencies, and private sector partners. Communities were also granted rights to manage and benefit from designated forest areas.
b. BIODIVERSITY CONSERVATION PROGRAMS, The Philippines ratified international agreements such as the CONVENTION ON BIOLOGICAL DIVERSITY (CBD), which emphasized the importance of conserving biodiversity and the ecosystem.
c. REFORESTATION AND WATERSHED MANAGEMENT, the government continued to implement reforestation programs aimed at restoring degraded forest lands and protecting critical watersheds.
d. ENVIRONMENTAL LEGISLATION REFORM: The 1990s saw the enactment of environmental laws and policy reforms.

The Present

a. The National Greening Program was launched in 2011 a flagship reforestation program which aims to plant
1.5 billion trees on 1.5 million hectares of public land over a six-year period.

b. Community-based Forest Management (CBFM)- a program that empowers local communities to manage and conserve forest resources through sustainable land use practices.

c. Integrated Social Forestry (ISF)

d. Climate Change Act (Republic Act 9729)

Source: Borlagdan, Guiang and Pulhin 2001.

B. Origin of Philippines' Forest Initiatives

For centuries, people have been exploiting forests for utilization purposes. For example, in the 17th and 18th centuries, the need for timber supply was crucial for shipbuilding and building construction (Holmes, 1975) but it was not until the 19th century that it emerged as a discipline. It began in Europe as a reaction to concerns regarding wood supply shortages (Hummel & O'Hara, 2008). This issue has shifted human use of forests from exploitative to regenerative.

Early interest in sustaining wood production resulted in decades of scholarly research on sustainable forest management, as well as the creation of silvicultural techniques to replenish them after harvest (Hummel & O'Hara, 2008). According to Hummel and O'Hara (2008), single- species forests are being converted into species mixtures and managed to achieve the structural or compositional diversity found in naturally regenerated forests in Europe and North America.

Forest cover in the Philippines and many Asian countries is quickly declining because of decades of excessive logging, fire, and human disturbances such as upland migration and agricultural development. There are pieces of evidence of small-scale logging in remote areas including traces of wood chopping for cooking and heating. Commercial logging was also visible due to timber supplies in industries such as buildings and other large-scale exploitation of forest resources for private gain

(Chokkalingam & (ed), 2006).

While human demands on forests grow for both consumptive and non-consumptive commodities and services, forest science continues to offer management services and vice versa. This mutual influence is evident as presented in numerous terms, such as ecological forest management, which have emerged over time and in several locations to describe a science-based approach in forest administration and management. This eventually led to the development of sustainable forest management. The terms may alter, yet the essence remains (Hummel & O'Hara, 2008).

1. Evolution of Initiatives for National Rehabilitation

The first known restoration initiative, as described by Unna Chokkalingam et al. (2006) took place in 1910, when the country's first forestry school (now known as the College of Forestry and Natural Resources) opened in Los Banos, Laguna. That same year, the national government began a massive planting drive to regenerate 4,095 hectares of the Talisay-Minglanilla Friar Lands Estate in Cebu province. Unfortunately, the project was discontinued due to a lack of capital. The authors also stated that more extensive reforestation took place between 1937 and 1941 when the government allocated funds for larger-scale programs. Similarly, a specialist monitoring office was set up under the Director of Forestry. From 1946 to 1948, there was minimal financing accessible for reforestation following World War II. The reason for this was that during this period, laws and policies related to reforestation were very rare. After the war, the government was focused on reconstruction activities and mitigating violent upheavals (Israel, 2015)

Since there was a lack of national government funding, activities were confined

to reestablishing plant nurseries, recovering equipment and tools, reconstructing infrastructure, and cleaning plantations. Republic Act 115 was passed at the end of 1948 to boost the government's reforestation efforts. This act levies fees on each cubic meter of timber harvested for commercial uses. Because of this measure, by 1960, the government had planted almost 55,000 hectares and spent twenty million pesos on forest replanting activities. Furthermore, Republic Act 2706, passed in 1960, established the Reforestation Administration. Between 1960 and 1972, reforestation efforts intensified, with 182,000 hectares of bare soil covered with trees.

The Reforestation Administration amalgamated with the Bureau of Forestry, Parks, and Wildlife Office, together with the Southern Cebu Reforestation Project, in 1972, under Presidential Degree (PD) 01 (Chokkalingam & (ed), 2006). Until 1954, the government had rehabilitated 161, 714 hectares of land by developing plantations with indigenous species, accomplishing its goal of rehabilitating barren lands, and compensating for the timber industry's diminishing supply of forest products from natural forests. However, these attempts resulted in additional obstacles and issues. According to Chokkalingam (2006), many forest people were evicted from their dwellings because they were believed to be the principal cause of degradation and an obstacle to restoration. A private enterprise, the Paper Industries Corporation of the Philippines, planted trees independently and collaboratively with farmers and forest inhabitants.

Thus, despite the involvement of private enterprises in reforestation initiatives, the government failed to include wood corporations in replanting activities on vast forest territories allocated to them for logging purposes. Even the private sector's participation was minimal. This was evident in the seventies when community participation in forest activities was formulated and implemented. The program

recognized local farmers cannot be ejected from the land, instead, they were allowed to participate in the conservation and development of forest resources. However, a complete turnaround from the original posture of the government, imposing punishment and other restrictions on people and communities who enter public land without a permit or license (Sajise, 2000). This results in an increase in illegal logging and less participation from the private sector. As a result, several rehabilitation attempts failed to address the underlying causes of degradation, such as excessive logging, livelihood needs, and unequal access to resources for upland farmers.

Hence. To address the rapid rate of forest depletion and promote forest rehabilitation, the government pursued various initiatives, including the involvement of the commercial sector and civil society.

The Revised Forestry Code, enacted in 1975, did exactly that, requiring nationwide reforestation efforts in conjunction with the commercial sector. This was done to strengthen the state's control over native woodlands, and it remains the foundation of current forestry legislation to this day. The following are some notable laws and projects that have promoted reforestation. (PCARR 1982, page 4). Despite their widespread support, they were later repealed or changed to maintain their effectiveness while keeping up with changing circumstances.

1. Presidential Decree (PD) 705, mandating timber licensee to plant trees on their concessions.
2. Letter of Intent (LOI) 423, directing active participation and collaboration of government organizations involved in government reforestation programs.
3. PD 1153 requires every resident over the age of ten (10) to plant one tree every month for five years in a row.

4. Memo Circular 985, mandating local governments to plant and care for seedlings nurseries.

While the Department of Environment and Natural Resources (DENR) oversees managing the majority of the Philippines' forestlands, Bisson and Wijangco (1997) report that DENR has carried out considerable reforestation programs through several techniques. Examples include granting forestlands to the private sector through leases and agreements, such as timber licensing agreements (TLAs), pasture lease agreements (PLAs), and industrial lease agreements (ILAs); forest management agreements; designating some forest lands as civil or military reserves; and declaring specific forestlands as protected area systems, watershed reservations, or special-use zones, to name a few. Additionally, numerous early forest assistance projects were implemented (Steve Harrison, 2004).

1. The Kaingin Management and Land Settlement Regulation or the Administrative Order No. 62 in 1971, was established to incorporate *"kaingineros"* into the government forest conservation programs, as well as prevent future expansion of shifting cultivation into forestlands.
2. The Forest Occupancy Management Program, 1974. Targeted at establishing "*kaingineros"* and sustaining their farming practices as well as improving their socioeconomic position. Also under this program, there was amnesty from prosecution, and permits were issued for the occupation of seven hectares for 2 years and renewable for an additional 2 years.
3. The Communal Tree Farming Program, or Citizen Tree Planting Program in 1979, was intended to build tree farms or plantations on open or undeveloped land. Communities become forestland guardians.

2. Multi-sectoral Rehabilitation Efforts

Throughout the previous few decades, the government has developed numerous people- oriented forestry programs, most notably in the early 1980s. Examples are the Integrated Social Forestry Program (1982) and the Community Forestry Program (1987). Many of these were funded by international donors, including the Ford Foundation, World Bank, and USAID, and were carried out in collaboration with the Department of Environment and Natural Resources. During this time, broader activities were carried out to improve several aspects of forestry management, including infrastructure development, capacity building, research, and policy assistance. Korten (1994) also detailed two notable projects that affected Philippine forests. These are the Forestry Sector Projects (FSP) I and II, which were created as part of the National Forestry Program in 1987 and 1995, respectively.

FSP I, transformed traditional government-implemented forestry with "contract reforestation" involving local communities, farmers, families, non-governmental organizations, local governments, and the corporate sector. Contractors were compensated for reforestation activities and the care of a specific plantation for three years, with a projected production of over eighty per cent and an average tree sampling height of 0.8 meters. Completing the contract, the plantation must be turned over to the implementing agency.

FSP II, on the other hand, emphasizes Community-based Forest Management (CBFM), in which organized communities or community cooperatives are contracted to reforest a specific region and granted ownership of the land they develop. The CBFM is primarily concerned with forests and related resources within them. Local communities are involved in the sustainable management and use of forest resources, to balance conservation and objectives with local livelihood needs (Lasco et al., 2010).

A far broader plan was established to include resources other than trees, such as water, land, animals, and fisheries. It also includes groups in the management of multiple resources on their territory. The Community-based Resource Management Program aims to empower communities to manage a variety of natural resources sustainably, addressing challenges such as resource depletion, environmental degradation, and community development (Chokkalingam & (ed), 2006).

In the 1980s, the administration's reforestation practices switched drastically to contractual schemes (Groetschel, 2001). Notable programs from the 1980s and 1990s were also implemented. Listed below are some of the programs:

1. The National Reforestation Program
2. Low-Income Upland Communities Project (LIUCP)
3. Coastal Environment Program
4. The Community Forestry Program
5. The Integrated Social Forestry Program (ISFP)
6. Forestland Management Agreement (FLMA)
7. Industrial Forest Management Agreement (IFMA)
8. Socialized Industrial Forest Management Agreement (SIFMA)

This thesis wishes to evaluate the effectiveness of the National Greening Program as a forest management approach, interpreting findings from literature over a period of 10 years, and hoping to find key patterns about the effectiveness of NGP. Analyzing textual data that depicts key strengths, weaknesses, opportunities, and threats through content analysis will conclude the effectiveness of the program. We assume that the findings will contribute to the understanding of the program's effectiveness and its impact on the environment and socio-economic conditions of the

local Beneficiaries.

Understanding the effectiveness of the National Greening Program is crucial for several reasons.

The findings will provide a basis for evaluating the performance of the NGP, where stakeholders can determine whether the program has met its intended goals and objectives. This is crucial for holding program managers, policymakers, and implementers accountable for their actions and decisions. Moreover, the findings will also allow stakeholders to have valuable insight into the outcomes and impacts of NGP.

It will also help identify what has worked well and what has not within the NGP. For example, reallocating resources to areas with immense potential. By understanding the strengths and weaknesses of the program, stakeholders can learn from past experiences and make informed decisions to improve future initiatives, like redefining policies, designing new initiatives, and addressing emerging challenges and priorities. The process of continuous learning and improvement is essential for enhancing the impact and sustainability of environmental programs like the NGP.

II. REVIEW OF LITERATURE

A. Introduction

The Philippine Forest is the focal point of the country's natural resource base and ecosystems. The main sources of waterways are forest lands, which provide water for irrigation, electricity generation, industries, and families. But with constant pressure from small and commercial logging industries, including upland communities, it is projected that soil erosion and hydrological deterioration of these watersheds can be very costly for the country, spending around P6.7 billion each year in productivity and utility of infrastructure, as well as off-site expenditures (FAO, 2020). Therefore, it is vital to manage forests effectively and efficiently to achieve environmental, social, and economic goals. In the same manner, the measurement of forest interventions or programs plays a critical part in forest management because it leads to informed and sound decisions about forest management.

The objective of this section of the study is to provide context for the interpretation of new data on forest management. It will contribute to programs of forest management in the Philippines by discovering new key concepts of forest management best practices. It will also provide information on the effectiveness of the forest management program, which is vital to the sustainability of every forest in the Philippines.

Several pieces of literature will be reviewed for this purpose, Literature regarding epistemology (Saunders, 2009; Wong, 2012; Boerr,1999; Markie, 2021) and content analysis (Mayring, 2023; Berelson, 1952; Downe-Wambolt, 1992; Holsti, 1968; Cole, 1988) will be presented as a method for research into the effectiveness of forest management. Literature regarding measures of effectiveness (Potter, 2000;

Sydenham, 2003; Bullock, 2006; Margenau, 1959; Melnyk, 2004; Smiths and Clark, 2004; Brown, 1996; Leonard, 2004; Kaplan, 1996 and Sink, 1985) will also be presented as this will provide the framework for evaluating the program intervention of forest management. Lastly, works of literature on

Philippine Forest resources (FMB, 1997; FMB, 2021; DENR, 1990; PIDS, 2013; COA, 2013; Israel, 20130) guided the research to identify relevant data sources.

B. The Philippine Forest Resource

To establish a foundation for understanding forest management, the author chose to research literature that provides an overview of what forest management entails in the Philippines.

The Philippine Forest is the center of the nation's foundation of natural resources and ecosystems. The primary sources of waterways are forest areas, which supply water for agriculture, electrical generation, industries, and people. However, with continual stress from small and commercial logging industries, including upland communities, it is anticipated that soil deterioration and hydrological decline of these watersheds will be exceptionally expensive for the country, costing around P6.7 billion per year in productivity, infrastructure utility, and off-site expenditures (FAO, 2020).

As a result, achieving environmental, social, and economic goals requires effective and efficient forest management. Similarly, measuring forest interventions or programs is important in forest management since it leads to more educated and prudent decisions.

1. Challenges and Issues in Forest Management

The forests' immense benefits to humans and animals put them at risk of overexploitation and destruction. Bautista (1990) noted some of the threats to the

forest's productive capacity, such as logging, shifting farming, and cattle grazing in the deforested uplands. Geist and Lambin (2001) added that human displacement and resettlement, wood extraction for domestic and industrial uses, and infrastructure extensions such as road and railroad construction, water and sanitation facilities, and electrical grids are all deforestation risks.

Even though the Philippines' forest is one of the most diverse in the world, the implementation of programs and regulations to assist its sustainable management has been incremental and tough. According to Rodriguez (2017), the forest sector is one of the "most challenging areas in the development of a community". For decades, various forest management initiatives have been carried out to address these threats and safeguard the natural assets that provide so many benefits for the survival of all living things. However, it appears that the successful protection and conservation of the Philippine Forest is overly complex in nature.

Bautista (2007), Geist and Lambin (2001), and Aguda (2023) all identified numerous underlying issues with the environment caused by agents of deforestation. Poverty, overcrowding, unequal land tenure regimes, wrong policies, weak administrations, and mounting debt are among the issues cited by Aguda (2023). Countering these forces would necessitate innovation and improved cooperation across every facet of the forest business, including funding sources, local communities, government, and other stakeholders. Despite all attempts, there are still barriers to overcome. For example, Singh (2015) stated that all forest recipients, including residents and stakeholders, must benefit equitably. Despite provisions for mutual benefit, local populations are always skeptical about the long-term viability of reforestation schemes (Singh, 2015). Gender sensitization is another difficulty in forest management, with a focus on the engagement of local populations, including women,

in the forest sector, the concept of equality, and their participation in various community and economic endeavors. While women make significant contributions to forestry and agricultural production food chains through income-generating activities, lawmakers and extension services do not effectively promote their involvement (FAO-UN, 2014).

Public lands in forest management have gradually evolved into a source of contention between residents and migrant settlers from the lowlands on the one hand, and private and public corporations, including government agencies and business corporations, on the other. As a result, tenurial disputes over the public domain became a key concern in forest management. According to Bautista (1990), the state classification of public lands and the contracts they sign to concessionaires, as well as state institutions' ownership of a substantial portion of lands, have hampered the admission of ambitious settlers and small growers. This has also undermined Indigenous residents' tenancy rights. Agribusiness in forest areas is another significant issue. According to Greenpeace (2023), one of the primary causes of deforestation is agribusiness, which entails burning or destroying enormous areas of forest to make space for crops and cattle. They claim that these approaches are transforming some of the world's most biodiverse areas into monocultures.

With all the obstacles and problems confronting Philippine Forest management, the government has made attempts to mitigate their impact and develop an initiative to improve the state of the Philippines' forests. Nonetheless, despite all these programs and policies promoting sustainable forest management in the Philippines, their implementation has been gradual and problematic. The challenges and concerns outlined above impede the successful and efficient implementation of forest management initiatives, particularly those including social, environmental, and

institutional systems. Lintag and Israel (2013) stated that the failure of some programs was driven by inefficient and partial successes of the national replanting aim.

C. The National Greening Program as a Forest Management Strategy

The National Greening Program (NGP) is an executive order issued by President Aquino III (DENR, 2016) in 2011 to address environmental issues like deforestation, forest degradation, and climate change. It is a Forest and Landscape Restoration (FLR) strategy that aims to plant 1.5 billion trees on 1.5 million hectares of land across the country by 2022 (Von Kleist et al., 2019). It operates under a National Convergence Initiative (NCI) led by the Department of Environment and Natural Resources (DENR), the Department of Agriculture (DA), and the Department of Agrarian Reform (DAR), in collaboration with all government agencies, local government units (LGU), non- governmental organizations (NGOs), the private sector, and civil society (DENR-NGP, 2012).

Because this program received significant financing, numerous studies were done to assess the NGP's implementation and outcomes. Several studies have examined the NGP's effectiveness in resolving the country's environmental challenges and encouraging long-term growth. For example, Alam and Khan (2017) discovered that the NGP enhanced forest cover, improved soil quality, and promoted carbon sequestration in the Cagayan Valley region. According to Buot and Delos Reyes (2020), the program has also offered communities socioeconomic benefits such as increased employment, and higher income, and in general, it enhanced better water and air quality.

However, several studies have indicated that the NGP still has implementation issues. Buot and Delos Reyes (2020) and Wiset (2022) identified a lack of community

participation, limited resources, and poor stakeholder coordination as significant challenges.

In regions where community participation was encouraged, the absence of genuine decision-making processes by local communities was overlooked. According to Fisher (2003; 1999) and Ribot (2003), as mentioned by Wiset (2022), the most successful engagement of local people in forest management occurs when participation is at its highest level. This means that local communities must be enabled to act in natural resource management. Other studies have found that constraints like unclear land tenure and uneven land use policies impede the program's success (Bautista, 1990; Aguda 2023).

Despite these barriers, the NGP is still a feasible program for achieving the country's sustainable development objectives.

III. STATEMENT OF THE STUDY

The Philippines' wooded area has expanded to 177,441 hectares, up from 6.83 million hectares in 2010 to 7.0 million in 2015. This value represents only 11.82 percent of the 1.50 million hectares intended. According to COA, they do not expect NGP to meet its objective even until 2021 because, based on their validated audit sample, the probability of survival of the species planted ranges only from 20 to 50%. According to a COA analysis, the most crucial factor contributing to the modest increase in forest cover was the program's hurried implementation. They further stated that DENR prioritized reaching its 1.5 billion tree planting targets over meeting the requirements of the partner communities, who were upland farmers and Indigenous peoples' villages.

DENR reported that during the first phase of implementation, they were able to plant 1.5 billion trees on more than 1.5 million hectares of land. They claim to have allocated 99.32% of the Php 47 billion budget for reforestation. Despite this, NGP resulted in just an insignificant increase in forest cover (COA, National Greening Program - Reforestation Remains an Urgent Concern, 2019).

The goal of this study is to assess the effectiveness of forest management techniques in the Philippines, with a focus on assessing the National Greening Program's success in achieving its objectives to find best practices in forest management.

IV. OBJECTIVE OF THE STUDY

The objectives of this study are to answer the following questions:

a. What categories of sustainable forest management are frequently demonstrated in the NGP's forest management activities?

b. What parameters of forest management best practices are addressed most frequently by the NGP in its reforestation program?

c. Is the NGP effective in meeting its goals and objectives?

d. Which forest management best practices increase the effectiveness of NGP as a reforestation intervention program?

V. RATIONALE

The Philippines is currently losing 36% of its forest cover, totaling 3.8 million hectares. Since 1990, and assuming no intervention is undertaken, the continuing devastation will rise to 4.5 million hectares by 2050 (Cororaton et al., 2016). Continuous deforestation will harm not only the ecosystem, but also people's health, and forest resources and services, as well, ultimately affecting human life.

In 2011, the Philippines issued Executive Order 26 to launch the National Greening Program.

Its principal purpose is to address the ongoing deterioration and destruction of Philippine upland forests. While addressing the environmental issue, NGP also plans to address poverty, food security, and climate change. Ten years after its establishment, beneficiaries continue to debate how successful NGP has been in executing its reforestation aims, despite the program's massive budget and national government support (Budget Appropriation Act 2011-2019).

This study seeks to evaluate forest management efforts by analyzing the efficiency of the Philippines' National Greening Program in meeting its objectives. This study also aims to investigate a development process that will highlight best practices in upland forest management, increasing NGP's efficacy in carrying out forest replanting efforts.

VI. SCOPE AND LIMITATIONS

This study will focus on the National Greening Program's success in accomplishing its aims and objectives after only ten years of operation. The researcher aims to identify "best practices" in forest management by content analysis of textual data from the only available literature from 2012 to 2022. Nonetheless, most research on NGP success focused on the initial phase of NGP implementation, which lasted from 2011 to 2016. A lot has happened after 2016, and with limited records of NGP accomplishments after 2016, additional research should have been conducted.

Furthermore, while content analysis is an important research method, it has limits. Given that it focuses on the actual content and internal elements of the literature, the researcher may interpret the same content differently, resulting in subjectivity. This strategy focuses exclusively on the text material, yet a much broader context may be required for full comprehension.

Content analysis involves qualitative data, which is difficult to correctly quantify. Assigning numerical values to qualitative qualities can oversimplify complicated meanings in the content (N. Showkat, 2017). Furthermore, Showkat (2017) claimed that ethical concerns and challenges may develop, especially when examining sensitive or potentially dangerous content. Ensuring the accuracy of coding decisions can be difficult, especially when many codes are involved.

Despite these limitations, content analysis is nevertheless a useful tool for examining communication and textual data when used correctly and in conjunction with other research methods.

VII. DESCRIPTION OF THE STUDY AREA

Through Executive Order No. 23. In 2011, the Philippine government launched the National Greening Program to combat the ongoing deterioration and deforestation of upland forests. The material and data will come from research articles and publications that discuss the usefulness of NGP as a forest management method.

As a result, this analysis solely considers published material from 2012 to 2022 that focuses on NGP performance as a forest management technique. However, it should be mentioned that the author's analysis is based on his subjective interpretation of the codes and categories derived from examining literature. Clearly outlining objectives and establishing research questions to be coded using an established coding scheme, including data triangulation, boosts the validity and reliability of this research.

VIII. METHODOLOGY

A. Theoretical Framework

1. Theory

The INPUT-PROCESS-OUTPUT MODEL (David,1998), created in 1934 by Wassily Leontief and revised by Bullock (2006), is used in this study to determine effective practices for sustainable forest management. This approach was used to describe and analyze forward and backward links between parameter sets (Sink, 2010).

Bullock (2006) noted that any controlled or uncontrollable factor may be used as an input. Data is supplied as inputs; in the context of this study, the inputs include written material from open- source journal articles published between 2011 and 2023 about the NGP's success in carrying out activities for its reforestation program. These inputs were subsequently processed and examined using content analysis to discover parameters that can serve as codes and categories for both the input and the output information. To assure the accuracy of the coding procedure, the researcher for this study will classify and categorize textual material with consistency and coherence using the parameters that have been provided. Coded textual communications must be counted to determine the number of times an idea appears in a text; this must then be matched to existing concepts to ensure its validity. The coding process's results must lead to inferences and inferences of relevant best practices for forest management operations based on the general trends and patterns found by the content analysis.

The outputs have several effects on the system's environment, which results in

the system achieving its aim or normative behavior. The input-output concept remains the same regardless of perspective, with the only differences being system kind and size, as well as the resulting transformations. The essential purpose of model building is to operationalize the relationship between input and output (Sink, 1985:4), where 'operationalize' refers to the process of measuring or defining a feature through measurement. The system integrating input-output model allows for system feedback and measuring the influence of inputs. This is critical for comprehending and managing any system (Kaydos, 1999:1; Neely, 1999, as referenced by Bullock, 2006).

To steer the entire research design, the researcher used an epistemology technique to get new knowledge from data sources by understanding how knowledge is disclosed through the created and presented information inside textual data. The researcher can get insights into how innovative ideas are produced within the context of this research by examining linguistic patterns, topics, and discourses. Furthermore, by critically scrutinizing the underlying assumptions about knowledge, truth, and proof, the researcher can create a new paradigm and provide new methods of knowing.

Below is a diagram of the IPO process that will be used for this research.

INPUT ---------- PROCESS ---------- OUTPUT

Input Textual Data Article Journals and Literature between 2011 and 2023 **SYSTEMS REVIEW**	Direct Content Analysis ● Identifies parameters of existing forest management in the Philippines ● Coding and validation of identified parameters ● Analysis of coded parameters to identify best practices for Sustainable Forest Management ● Determine if NGP is successful in implementing its goals **EVALUATION AND ANALYSIS**	Output ● Development process for Sustainable Forest Management Best Practices ● Effective Best Forest Management Practices

Figure 8.1 Diagram of IPO Process

2. Method

To guide this research, the researcher has employed one of the most adaptable and effective methodological approaches for carefully studying textual content to find underlying concepts, contextual implications, and emergent concepts. This is content analysis. According to different writers, like Mayring (2014), Berelson (1952), Downe-Wambolt (1992), and Chetty (2016), content analysis is performed by evaluating written texts for communication purposes. Cavanagh (2017) added that its concentration is on extracting and refining content-related categories from books and journals. He also stated that this technique of analysis might result in recommended responses to research questions, hypothesis testing, and the general development of a theory. Thus, the strength of this methodology stems from its stringent methodological control and step-by-step study of materials. Another author, Mayring (2013), said that the category system is the primary tool for analysis. It also enhances the procedure's intersubjectivity, allowing others to recreate or repeat the study.

Geist and Lambin's (2001) classifications of direct and indirect causes of deforestation will help the researcher analyze the textual data from the communications. The authors' study (Geist and Lambin, 2001) divides the underlying causes of deforestation into four categories: "socio- demographic and cultural factors, market demand and economic development and technological and biophysical factors, policy-institutional-governance factors" which are then coded into a much simpler category to represent each group. These involve the environmental, social, economic, and institutional components.

The environmental component underpins all biophysical and technological factors, the social component focuses on poverty and population pressure, the economic component on market demands and economic development, and the

institutional component on policies and governance. As G.M. Mickey (2008) noted, the balance of these components characterizes sustainable forest management.

Furthermore, the purpose of this study is to determine whether the NGP is successful in addressing the widespread issue of deforestation and forest degradation in the Philippines. It also plans to establish sustainable best practices in forest management to help NGP achieve effective subsequent execution of its reforestation program. This will lead to the creation of a forest management development process that may be utilized as a standard for implementing forest reforestation initiatives. The chart below depicts the research approach that prompted this study to accomplish the aforementioned statements. The research was conducted in the following steps:

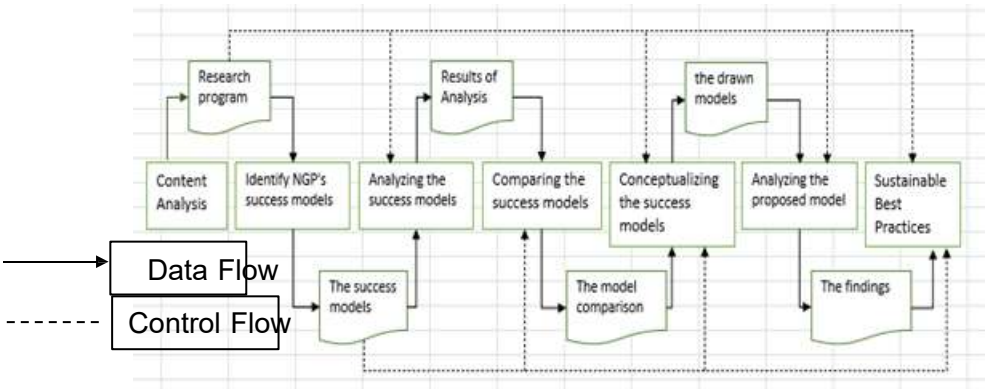

Figure 8.2 The Research Process Modified by David (1998)

Step 1: Content Analysis: The research involved content analysis of secondary sources,

including journals, papers, conference proceedings, and books. The researcher identified theories and models of NGP's effectiveness from scholarly works and evaluated textual data into the IPO model based on their nature (Davis, 1998). This is to achieve the holistic approach described by Davis (1998).

Step 2: The Research Design: Based on the early content analysis, the researcher combined and conceptualized the ideas into the IPO model. Figure 1 shows this. The model developed can be used to identify the flow's semantics, variable relationships, and model framework interconnections. The identified variables in each component were created using the IPO model's processional and causal ideas. Parameters in these frameworks are validated by comparing, adopting, adapting, and incorporating previously utilized concepts.

Step 3: Analyzing the suggested model: To ensure the model's usefulness for future investigations, the researcher chose component indicators depending on the type of components used in previous studies. In addition, the proponent triangulated the suggested model with existing models that follow sustainable forest management best practices to assure output reliability.

Step 4: Final Output: The final stage will involve documenting the research findings. This stage will also include designing the development process, outlining the basic forest management implementation guidelines, and identifying opportunities for more empirical study.

3. Measures of Effectiveness

The National Greening Program's efficacy is measured by its ability to fulfill its specified goals and objectives efficiently and successfully. According to several authors "measures of effectiveness" are the measurements of effectiveness that

provide decision-makers with feedback on the effects of purposeful acts (Bullock, 2006). Melnyk (2004) also stated that successful measures serve as a key link between strategy and execution, effectively changing plans into reality. Smiths and Clark (2004) added that it is a measure of a system's ability to satisfy its identified demands (or requirements) from a specific point of view." Brown (1996) and Leonard (2004) concurred that the essential element of effective measurement is to ensure that the appropriate measures are utilized to assess the system's purpose. Morse (2003), on the other hand, stated that the goal is to determine which inputs or environmental conditions produce which results. The root of the problem in considering which inputs result in which outcomes is recognizing and expressing the "cause-effect linkages" between the "strategic, operational, and tactical levels" and determining the implications and environmental variables of each of these levels (Kaplan, 1996; Sink, 1985).

Combining empirical investigations and content analysis can be an effective research and analysis strategy. It can create metrics of effectiveness by following a systematic procedure that includes data collection, analysis, and interpretation. Combining empirical research and content analysis provides researchers with a strong method for examining complex phenomena, enabling greater understanding, rigorous analysis, and significant contributions to knowledge and practice in a variety of disciplines of study. There are numerous approaches for developing effectiveness measurements to analyze the NGP's forest land management activities (Gläser-Zikuda & et.al., 2020). Krippendorff (2004) and Patten (2000) stated that there are several ways to develop measures of effectiveness using empirical study and content analysis.

The first step is to describe the study's objectives and determine the variables

that will be utilized to measure effectiveness. Empirical research frequently entails determining specific results or indicators that demonstrate the efficacy of a program, or intervention. Content analysis contributes to this process by identifying important themes, concepts, and dimensions in existing literature, papers, and other sources that can be used to inform variable selection.

Second, empirical studies acquire data using a variety of methodologies, including surveys, interviews, observations, and experiments. Content analysis is the systematic collection and analysis of textual or visual data from papers, reports, publications, websites, social media, and other sources. Combining these strategies allows researchers to collect both quantitative and qualitative data on the elements that influence effectiveness.

The two approaches to coding and analysis differ in many ways. Empirical studies use statistical techniques to quantify relationships between variables and measure effectiveness, whereas content analysis involves coding textual data to identify patterns, themes, and discourses related to effectiveness. Researchers can utilize coding techniques to discover repeating themes, feelings, or arguments in data that reveal characteristics influencing efficacy. Integrating data from empirical studies and content analysis enables academics to have a more comprehensive picture of effectiveness. Empirical data provide quantitative indicators of effectiveness, whereas content analysis provides qualitative information about underlying mechanisms, contextual factors, and stakeholder views. Triangulating information from both methodologies allows researchers to validate results, uncover converging or diverging evidence, and generate a richer interpretation of effectiveness.

IX. RESULTS

The general material supplied in this research has identified extensive evidence of five primary characteristics that affect the effectiveness of the NGP, either through their actions or through their effect on supplemental elements, which in turn affect the program's overall success. Extracts of any kind from each study demonstrate that this evidence is consistent with the primary or supplemental causes. (See Appendices 1 through 4). Although each study addressed a separate topic, a common thread emerged.

The shared themes in Table 1 include the economic, social, environmental, and institutional components that enable reforestation operations to thrive.

Table 9.1 Thematic Grouping for Content Analysis

Planned and Unplanned Forest Product Extraction and Infrastructure Expansion		
THEME	**CODES**	**KEYWORDS**
ECONOMIC COMPONENT	Market Demand and Economic Development	Improved market access, Economic growth targets, Increase Socioeconomic status, Increase income, High demand for wood, Forest resources, and services
SOCIAL COMPONENT	Poverty and Population Pressure	Value of forest as subsistence and source of cash, Population pressure, and migration, Rural Poverty, Limited Livelihood options, Landlessness/ Farm and settlement expansion, Training and Education opportunities
ENVIRONMENTAL COMPONENT	Technological and Biophysical Factors	The proliferation of chainsaw, over-extraction, unsustainable harvesting, Inappropriate Land uses, Low plantation productivity, Fire, Floods, Landslides, and calamities.
INSTITUTIONAL COMPONENT	Weak Policies and Governance	Corruption and Collusion; Poor monitoring and Law enforcement; Institutional Weakness; Lack of political will and coordination, open access; logging bans as perverse incentives; Unstable, confusing, conflicting forest policies and mandates

Adapted from: Categories of direct and indirect causes of deforestation and Forest Degradation (Geist and Lambin, 2001)

TABLE 9.2 Aligning the coded literature with the Research questions.

RQ1 (N=14)	RQ2 (N=23)	2Q3 (N-=19)	RQ4 N= 20)
Tomaquin, R. (2022) Gregorio, N. et.al. (2016) Herbohn, J (2020) Israel and Lintag (2013) Herbohn and Gregorio (2020) Goltiano, H. (2021) Balangue, T. (2015) Luna, M.PG. (2016) Cagalanan (2016) Enoc and Penaflor (2022) Israel, D.C. (2016) Von Kleist, K. et.al (2019) Oliveros, E. (2022) Wiset, K. et.al. (2022)	Gregorio, N. et.al. (2016) Moncada, M. (2019) Herbohn, J (2020) Abella, R. (2019) Israel and Lintag (2013) Herbohn and Gregorio (2017) Goltiano, H. (2021) Balangue, T. (2015) Perez, G.J. et.al. (2020) Israel, D.C. (2016) Von Kleist, K. et.al (2019) Dela Merced, K. et.al. (2020) Oliveros, E. (2022) Wiset, K. et.al. (2022) Domingo & Manejar (2019)	Tomaquin, R. (2022) Cororaton, C.B. (2016) Gregorio, N. et.al. (2016) Moncada, M. (2019) Herbohn, J (2020) Abella, R. (2019) Israel and Lintag (2013) Herbohn and Gregorio (2017) Goltiano, H. (2021) Balangue, T. (2015) Luna, M.PG. (2016) DENR (2016) Cagalanan (2016) Israel, D.C. (2016) Von Kleist, K. et.al (2019) Oliveros, E. (2022) Wiset, K. et.al. (2022) Gregorio, N. (2018) Domingo & Manejar (2019)	Tomaquin, R. (2022) Cororaton, C.B. (2016) Gregorio, N. et.al. (2016) Moncada, M. (2019) Herbohn, J (2020) Abella, R. (2019) Israel and Lintag (2013) Herbohn and Gregorio (2017) Goltiano, H. (2021) Balangue, T. (2015) Luna, M.PG. (2016) DENR (2016) Cagalanan (2016) Enoc and Penaflor (2022) Israel, D.C. (2016) Von Kleist, K. et.al (2019) Oliveros, E. (2022) Wiset, K. et.al. (2022) Gregorio, N. (2018) Domingo & Manejar (2019)

TABLE 9.3 The table below provides a comparative review of NGP's concerns and problems as a forest management technique, as well as its significance to the program, with a focus on reforestation initiatives. This is an overview of NGP's BMP effectiveness as documented in the literature across various authors.

Table 9.3 Comparative Review of NGP's Concerns and Problems as a Forest Management Technique.

Author	Title	ISSUES	SIGNIFICANCE	EVALUATIONS / TREATMENTS	CONCLUSIONS	RECOMMENDATIONS
Tomaquin & et.al. (2022)	Best practices of NGP: A Discourse of Sustainable Use of Resources and its Community Development Contributions	PO's involvement in a govt project is vital for its success. The involvement should go beyond just planting trees and taking care of them. PO should manifest their sincere participation in all activities of reforestation	With DENR and NGP providing support to PO in seed supply and training in managing plantations resulted in quality yield making the reforestation more productive. The perception of the Pos is also commendable because of the support that the farmers get from the stakeholders.	Used the descriptive-survey method. Two (2) groups of respondents were used- the implementor and the farmer-beneficiaries. Other research strategies were also used such as qualitative interviews, observation and FGD.	Providing training for the farmer's beneficiaries has a positive or good impact on the economic conditions of the forest beneficiaries. It also has a huge impact on reforestation, incl. the biophysical condition of the local site. Community experience is very favorable if NGP empowers them and the community on the management of forest plantations	It is recommended that efficient collaboration between LGU and PO should be implemented, including the involvement of the academic institutions in implementing NGP programs.
Cororaton & et.al (2016)	Assessing the Potential Economic and Poverty Effects of the NGP	Declining forest cover often results to increasing incidences of infectious diseases that negatively affects the local employment	It is evident that successful reforestation increases the overall supply of productive land in the country, which increases the utilization of land as forest.	Assessment of the potential economic poverty and income distribution effects of NGP	Reforestation increases the overall supply of productive land in the country, increases the utilization of land as a forest. Factors such as market for labor, capital and land are affected favorably as the overall output of the economy improves. As a result, factor income increases. Households are therefore positively affected by higher factor incomes.	Provisions of income generating activities integrated with reforestation increase household incomes. The improvement of the overall output of the economy correspond to the integration of agricultural crops with reforestation activities
Gregorio, Current Conservation (2018)	Implementing the NGP in the Philippines: Lessons Learned	The community-based approach to forest restoration has been adopted in the Philippines	It is important to know the needs of the communities handling tree plantations. Providing additional income generating activities and support such as capacity building and security from land tenureship are vital in the success of the program	n/a	Those involved in community-based forest restoration in the Philippines are poor. Financial incentives and food security have become primary drivers of participation. CBFF has crucial role in providing sustainable livelihoods in community forest restoration. It also demonstrated the importance of adequate social preparation, strong leadership, security of land tenure, and supportive policy and good governance in promoting a successful community-based forest restoration project.	Addressing socio-economic and food security issues of small holders is key to the success of community-based forest restoration. Hence, livelihood projects that provide food and income to the community are essential components of successful forest restoration. Social mobilization and community collective action should be facilitated when immediate financial incentives are offered.
Moncada (2019)	Impact of NGP in the environment and Economic well-being of its beneficiaries	Forests provide a range of ecosystem services, ranging from the provision of food crops, livestock and fish to providing recreational experiences. However, the misuse and abuse of the country's forest resources resulted in the worst state of our forestlands		A semi-structured interview scheduled was constructed and descriptive statistics were used in summarizing and analyzing the general findings of the data. The most notable environmental impact of NGP implementation was improvement in forest condition.	The improvement in forest condition was attributed by the respondents to the stakeholders to develop their own land holdings. The communities acknowledged that the implementation of NGP motivated them to develop and improve their land use practices for their own benefit through control timber poaching and shifting cultivation. Although there were no immediate benefits from planting fruit trees, farmers shifted	It is recommended that similar study be conducted in other NGP sites to assess success of the program. Problems and issues in the implementation of NGP should be documented, and alternative actions should be taken to improve the implementation of NGP and future greening programs of the country.

		today. The combined reforestation efforts of both the government and private sectors are not enough to stop the rapid deforestation rate of Philippine forests. In February 2011, the NGP was launched to enjoin the massive participation of the citizenry in the series of tree planting activities.			their farming practices into more environment-friendly technologies by integrating agricultural crops and forest trees.	
Abella & Cutamora (2019)	An Evaluation of the NGP Implementation in Simala, Cebu Philippines' Utilizing ABCD Model	Benigno Aquino III signed EO 26 on February 2011 which established the NGP and forge partnership with the DOE to mobilize students for seedling production and tree planting activities. However, in some instances NGP has not implemented the EO effectively	The inclusion of state universities in the implementation of NGP particularly in tree planting activities and seedling production may significantly improve NGP goals in reforestation.	Evaluation of the Effectiveness of the implementation of the NGP in Simala National High School, a secondary public school in Cebu, Philippines utilizing the ABCD model.	The implementation of the NGP in Simala National Highschool for the school year 2016-2017 has been effective based on the evaluation done utilizing the ABCD model. Results suggest that student and teachers' participation have greatly impacted the supply of plant materials in the region.	The research recommended that regular schedules of tree planting activities should take place in state universities and other schools. Participation of students, non-teaching personnel should participate to ensure success of the program, under the supervision and coordination of government agencies.
Goltiano & et.al (2021)	The Effect of the implementation of the NGP in the Socio-economic status of small holders in Calibiran, Biliran Philippines	While the main environmental and economic benefits of the NGP can be realized in the long run, the program could potentially provide short-term socioeconomic benefits through capacity-building initiatives and payment for labor in implementing the restoration activities.	The importance of stakeholders' support in providing income-generating activities, including capacity building should be highlighted in all reforestation programs.	This study compared the socioeconomic status (SES) of members of the community-based forestry Project Beneficiaries Association (CFPBA) in Calibiran, Biliran Province who implemented the NGP with community members who were not involved in the program.	CFPBA members respondents' testimonies indicated that majority of the members of PO involved in NGP programs do not feel the improvement in their daily lives. But they acknowledged some benefits from their participation that included improvement of their occupational knowledge and skills through training and advisory services.	It was suggested that the presence of a sustainable livelihood component, participation in planning and strong extension service should be present in reforestation programs to strengthen NGP implementation and increase its success.
Balangue (2016)	NGP Assessment Project: Environmental Component Process Evaluation Phase	Considering the huge budget of the NGP and the absence of a physical audit of the NGP plantations from a third-party evaluation, the Philippine Institute of Development Authority (PIDS) of the National Economic Development Authority (NEDA) recognizes the importance of investigating the impacts of NGP and to find out ways that may further improve policies and implementation and	Establish whether the NGP environmental objective primarily restoring degrade/ deforested forestland will achieve food security, minimize poverty, stabilize environmental condition, reduce soil erosion, biodiversity conservation, and uphold climate change adaptation/ mitigation. Furthermore, the project will validate the survival rate and growth performance of NGP forest plantations under different site conditions and assess whether NGP could contribute sustainable wood supply for energy, furniture, housing, and other allied industries.	This study consists of key informant interviews and focuses discussion groups for gathering information in the needs and requirements of the site to increase success in reforestation activities.	To sustain the NGP program and increase its success is putting in place all necessary infrastructures for replanting activities. Moreover, a long-term and sustainable partnership between national government, DENR and POS is necessary.	Several recommendations were given by the report: A partnership between National Government, DENR and PO should be present to sustain the NGP plantations, at site level, indigenous planning materials should be prioritize, including the proper execution of reforestation activities such as mapping, site survey, capacity building, monitoring and maintenance. One important aspect of reforestation support that is needed in site plantation is the construction of access road to all reforestation areas.

		management mechanism of reforestation program in the country.				
Gregorio, Herbohn, & et.al. (2020)	A Local Initiative to Achieve Global Forest and Landscape Restoration Challenge- A lesson learned from a community-based Forest Restoration Project in Biliran Province, Philippines	Forest and landscape restoration in the tropics is often undertaken by groups of small holders and communities whose livelihoods are primarily agriculture and forest-based, however, poverty alleviation and sustainable management of forest resources are far from being realized. This is because of people's organization are disbanded, communal plantations, in some cases are abandoned, and reforestation sites revert to grassland or are converted to kaingin (slash and burn) farms by locals.	This study shows the significance of support from all stakeholders to implement community-based reforestation programs with consideration to their livelihood and power to make decisions related to the program implementation.	This study is a case study of a pilot community-based forest restoration project that was undertaken in Biliran Province to understand the impediments, and pilot test interventions to improve restoration outcomes. The project was designed using systems thinking, employing smallholder-based best practices, and applying the principles of a participatory approach.	The results revealed that the initial participation of smallholders is mostly driven by short-term financial incentives. However, long term commitment to managing the trees is attributed mainly to sustainable livelihood, land and tree rights, equitable sharing of benefits, strong leadership, effective governance and improved human and social capitals. The support of extension officers, used of high-quality seedlings, and participation of women are essential for community-based forest restoration success.	Participation of smallholders in community-based forest restoration projects is mostly driven by short-term financial incentive. The long-term commitment to manage the trees should have a combination of factors, namely sustainable livelihood, land and tree rights, equitable sharing of benefits, strong leadership, effective governance and improved human and social capitals. Further, adequate and timely support of extension officers, use of high-quality seedlings and participation of women are essential.
Cagalanan (2016)	Public-private partnerships for improved restoration outcomes in the Philippines	The NGP faces a notable challenge for restoration with indigenous species in protected areas, which paradoxically stems from protected area policies aimed at preventing deforestation. The harvest of indigenous species in protected areas is generally prohibited. For planted trees, even the exotic species, there have been frequent changes in policy regarding their harvest, which has resulted in a lack of trust among communities	Stakeholder support and participation in community organizing and capacity building provides positive outcomes to improve community base efforts in reforestation.	A case study discussing the experiences of POS to identify potential issues that limit the success of NGP and other past programs	The extended period of community organizing and capacity building for community-based forest management, the experience in managing savings and investing in community-driven projects, the good performance projects access feedback, indigenous seedling production being an income- generating activity, and having a trained community patrol group are factors that greatly improve reforestation.	NGP has extended efforts to harmonize strategy to coordinate a wide range of stockholders involved in reforestation. Organizing communities and extending support for capacity building for all aspects of community-based projects are needed to improve outcomes.
Enoc & Penaflor (2022)	Carbon sequestration Potential of Fruit Farms in selected sits of NGP in Batangas Province, Philippines	If there is a decrease in perennial and annual crops, there is an increase of shrubs/ grasses which affects the carbon sequestration potential of tree farms	The study necessitates the importance of planting diversified planting materials to have a high success rate and have positive impact on carbon sequestration of tree farms.	The study assessed the carbon sequestration of existing fruit farms in Batangas province using A structured questionnaire coupled with KII, FGD, desk review of secondary data, farm and community visits, and gathering of geo-referenced points was done to gather the needed data.	Diversity of planting of several trees to increase production volume	Continued monitoring to access existing land cover is recommended as well as putting in place necessary interventions with the help of science and technology to mitigate the effect of climate change on plant materials. The need to organize skills training among Pos including financial management training in order to capacitate them in handling finances
Perez & et.al. (2020)	Reforestation and Deforestation in Northen	NGPs reforestation sites were examined	Data shows evidence that critical issues were happening within NGP sites	Using remote sensing and GIS clearly shows evidence of what the reality on ground level	Despite the massive efforts of planting seedlings in degraded lands, the state of	Reforestation activities must be better monitored to ensure goals are achieved.

	Luzon Philippines: Critical Issues as Observed	using remote sensing and GIS. The result shows that forest cover increased in the first phase of NGP implementation from 2011 to 2015 but decreased significantly from 2016 to 2018.	during the NGP period that deters the improved impact on NGP.	of NGP sites will be foundation to improve biodiversity in the degraded land and even in protected area sites.	forest cover, at least in the greater Luzon region, does not show significant improvement on a large as well as regional scale.	
Kleist & et.al. (2019)	How improved governance help achieve the biodiversity conservation goals of the Philippines' NGP	The NGP is an initiative designed to increase forest cover on degraded lands, however, even with the inclusion of an explicit biodiversity objective in the NGP. The government still struggling to implement projects specifically addressing biodiversity recovery	Improving governance can help achieve biodiversity conservation goals on the National Greening Program	This is a case study to determine the cause of the impediment of the restoration practices of NGP	Factors that impede the attainment of biodiversity objectives are meeting targets, failure in monitoring forest management practices and poor planning, organizing and implementing.	Achieving the NGPs biodiversity will require the inclusion of native trees in low-diversity plantations and reliance on the national protected area system. Incorporate biodiversity-focus plantings with proper follow-up measures to ensure success.
Lintag & Israel (2013)	Assessing the Efficiency and Effectiveness of the Restoration Program of DENR	In 2011, the national government wishes to evaluate program for national budget decision-making. Funding for existing programs that are not delivering their intended outcomes are either terminated or reduced and those programs that are effective and efficient are given additional funding especially those that have direct effect on the welfare of the people	To develop recommendations to improve reforestation activities	This study determines if the reforestation program of DENR over the years has been successful in attaining its stated objectives and in mitigating the adverse impacts of climate change on forest resources and the natural environment	At the national level, the reforestation of the DENR has only partially attained its replanting targets, also at the national level, it appears to have become relatively inefficient in the conduct of replanting activities over the years. However, at the individual site level, it may have been effective to some degree in increasing incomes and livelihood opportunities, improving the natural resources and environmental situation and achieving the other objectives of reforestation in many areas.	The study asserts that other than the infusion of sufficient financial and manpower resources, a reforestation program would have a better chance of attaining its objectives, if its implementers can sufficiently monitor activities and effectively implement changes in operations to address the problems encountered.
Merced & et.al. (2019)	Impact of the NGP: Barangay Salasang and Sumali's Experience	NGP has affected the socio-economic condition of the beneficiaries and the biophysical condition of the study areas such as Brgy Salasang and Sumali	Community experienced environmental challenges before the NGP was implemented. The implications of positive effect at barangay level, especially to their daily lives and to the biophysical condition of the surroundings were evident	This study surveyed the socio-economic profile of the beneficiaries of the NGP at Brgy Sumali and Salasang to evaluate the impact of NGP to these barangays after it has been implemented. It also aimed to assess its impact on the bio-physical condition of its surroundings	There is an implication of positive effect of the NGP on the daily lives of the beneficiaries at barangay level, also improving the bio-physical condition of the surrounding areas around NGP sites.	NGPs support before, during and after the development of upland farms through agro-forestry and reforestation. Also rehabilitating open areas, grasslands, mangrove and even coastal areas. These were done in partnership with agencies and community-based organizations. A positive outcome was achieved, mainly because provisions of incentives were implemented on the production of planting materials and planting activities
Oliveros (2022)	Evaluation of the Implementation of NGP among Indigenous People's participation in region 12	Many indigenous people living in ancestral domain and forest areas were left out in academic, policy and public discussions, especially in decision-making which affects their	The significance of collaboration between stakeholders and IP community resulted to a successful symbolic relationship between them, consequently making the project successful	The research utilized descriptive correlational design, which described implementation strategies, participation of IP groups and the attainment of the NGP program.	The IP community supported and participated in the implementation of the NGP because it has helped them in obtaining food and additional income. The involvement of the IP groups in making site selection, patrolling and supervision has given them the perception of empowerment and	NGP should provide stronger support for the IP people to increase incentives because it will motivate more support than can result in more trees being planted, and higher success of tree plantations.

		lives. It is for this reason that NGP included the IP community in reforestation program of the government. The focus on the implementation of IP Rights Act of 1997 provided opportunities for IP communities to participate in decision-making practices that greatly affect their livelihood and well-being.			enlightened them in their crucial role in reforestation activities.	
Kanchana Wiset (2023)	Assessing the effectiveness of the engagement of local people in restoring degraded forest landscapes in Leyte and Biliran Provinces, Philippines	The Pos lacked the power to influence and finalize decisions in planning and designing reforestation land used and has minimal involvement in conducting plantation activities. These diminished the effectiveness of the engagement process of the IP groups which resulted to diminished effectiveness of the engagement process.	Majority of forest management programs in the Philippines focused on planting targets but most did not stipulate the details of how forestry programs would involve local people	Examine the participation of communities in NGP projects, especially POs	While DENR office has imposed targets for Pos to restore areas of denuded forests, the lack of participatory process was noted, with Pos feeling their duties were only limited to maintaining and protecting the plantation sites and not developing their tree-base livelihoods.	The engagement process of the NGP projects needs to be improved to reach a truly participatory decision-making process. There was a need to address tenure rights of thePos over the plantation sites and planted products. Top-down decision-making involved poor devolution of local power which then limited the effectiveness of the engagement of the local communities.

Table 9.4 reveals that authors, including Calaganan (2016), Moncada (2019), Merced (2020), Tomaquin (2022), Enoc (2022), and Oliveros (2022), addressed all four success variables. Other authors were more selective, offering studies on just a few parameters.

TABLE 9.4 Factors that affect the success of NGP as a Forest Management Intervention to Deforestation

Success Factor*						
Publication by Lead Author	**Social Component**	**Environmental Component**	**Economic Component**	**Institutional Component**	**Material Benefits**	**Context of Publication**
DENR (2012)	-	Y	-	Y	Baseline data	Paper
Israel, Danilo C. (2013)	Y	N	Y	Y	Resource Allocation	Discussion Paper
Baldos, JF. (2014)	Y	Y	-	Y	Baseline data	Paper
Luna, M.P (2016)	N	N	N	N	Baseline data	Article
Cororaton, Ceasar B. (2016)	Y	Y	Y	-	Baseline data	Article

Gregorio, Nestor (2016)	Y	N	Y	N	Baseline data	Paper
Israel, Danilo C. (2016)	Y	Y	N	Y	Baseline data	Discussion Paper
Balangue, Tonie O (2016)	Y	Y	N	N	Baseline data	Report
Cagalanan, Dominique (2016)	Y	Y	Y	Y	Baseline data	Article
Herbohn, John (2017)	N	N	N	N	Baseline data	Report
Moncada, Melanie. P (2019)	Y	Y	Y	Y	Baseline data	Article
Abella, Rongie C. (2019)	Y	Y	-	Y	Baseline data	Article
Von Kleist, Kurt (2019)	N	N	N	N	Baseline data	Article
Gregorio, Nestor (2020)	Y	N	Y	Y	Baseline data	Article
Perez, (2020)	Y	N	Y	Y	Baseline data	Article
Merced (2020)	Y	Y	Y	Y	Baseline data	Paper
Goltiano, Henry (2021)	N	N	N	N	Baseline data	Article
Tomaquin, Ramel D. (2022)	Y	Y	Y	Y	Capacity building	Article
Enoc (2022)	Y	Y	Y	Y	Monitoring and evaluation system	Article
Oliveros (2022)	Y	Y	Y	Y	Community Participation	Article
Wiset, Kanchana (2022)	Y	Y	Y	N	Participatory decision-making process	Article

*Social components- Poverty and Population Pressure; Environmental Component- Biophysical factors;
*Economics- Market Demand and Economic Development; Institutional- Policies and governance.
*Y- addressed in coding literature as factors that lead to successful forest management.

The following are charts highlighting the best practices of forest management that were addressed most frequently by the NGP in its reforestation program.

Figure 9.1 Environmental Component: Technological and Biophysical

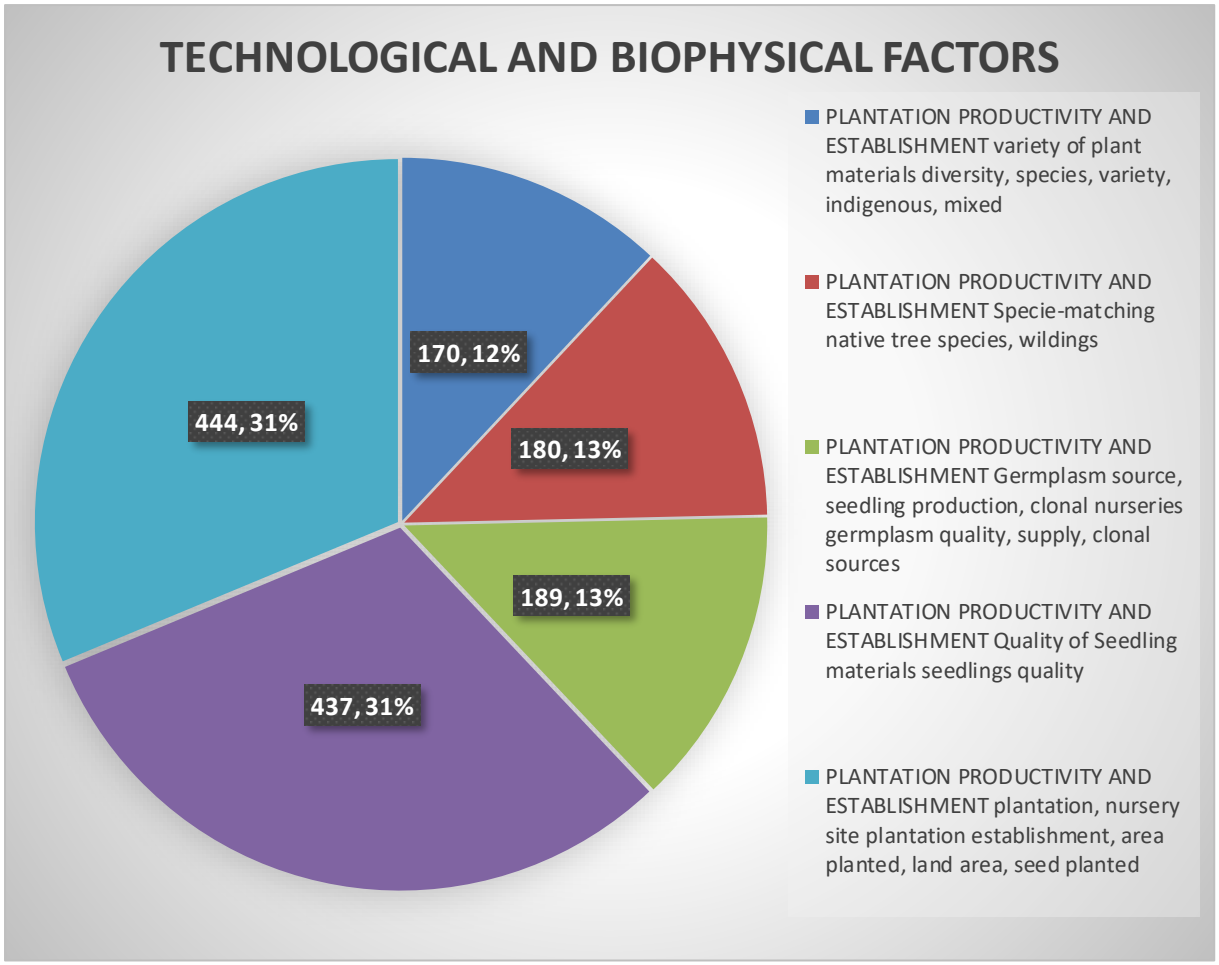

Figure 9.2 Social Component: Poverty and Population Pressure

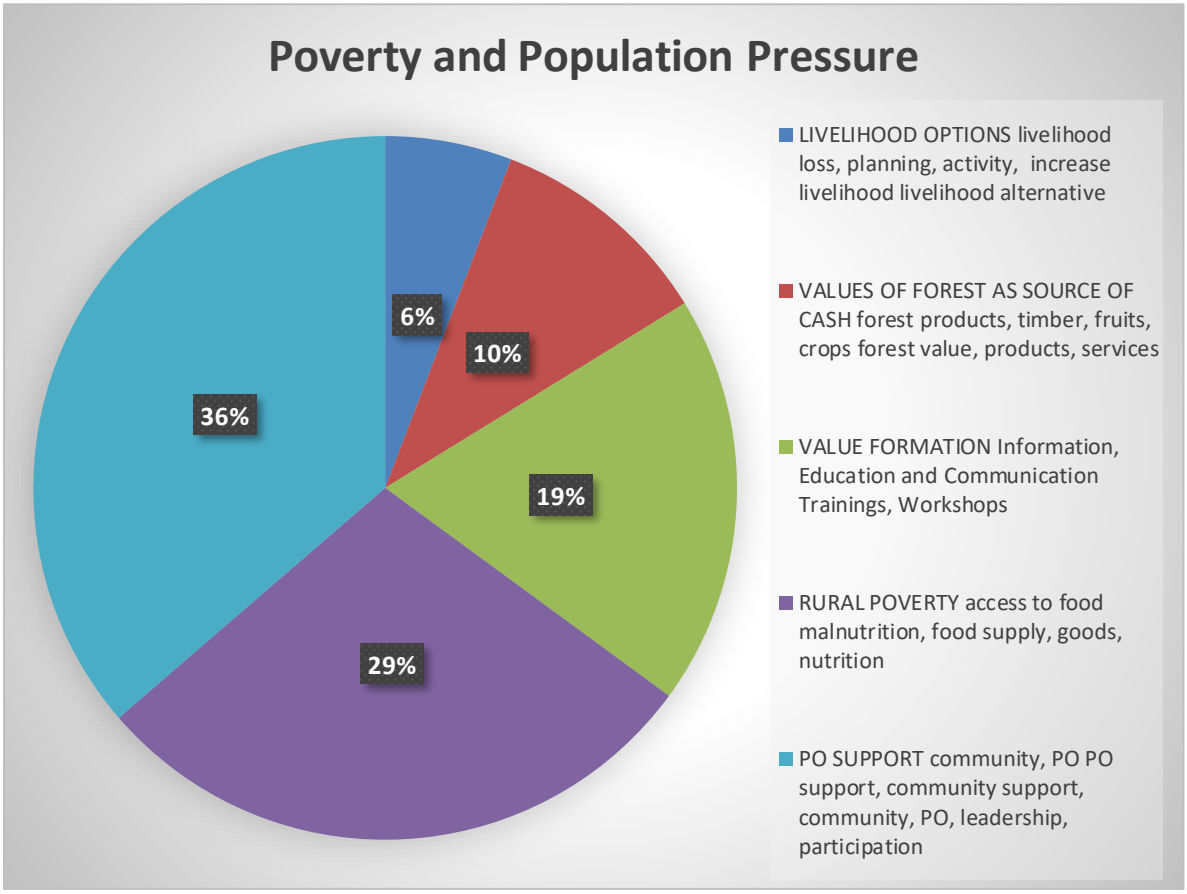

Figure 9.3 Economic Component: Market Demand and Economic development

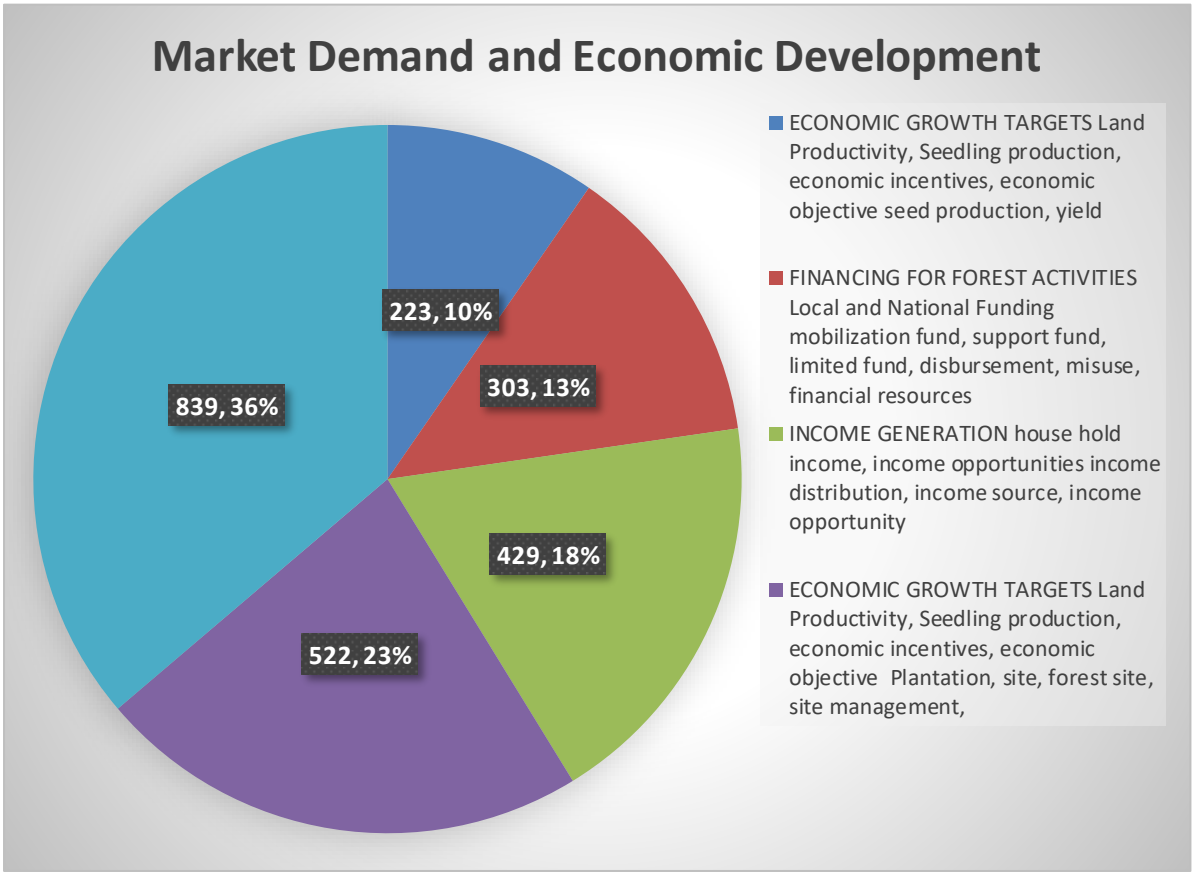

Figure 9.4 Institutional Component: Governance and Policies

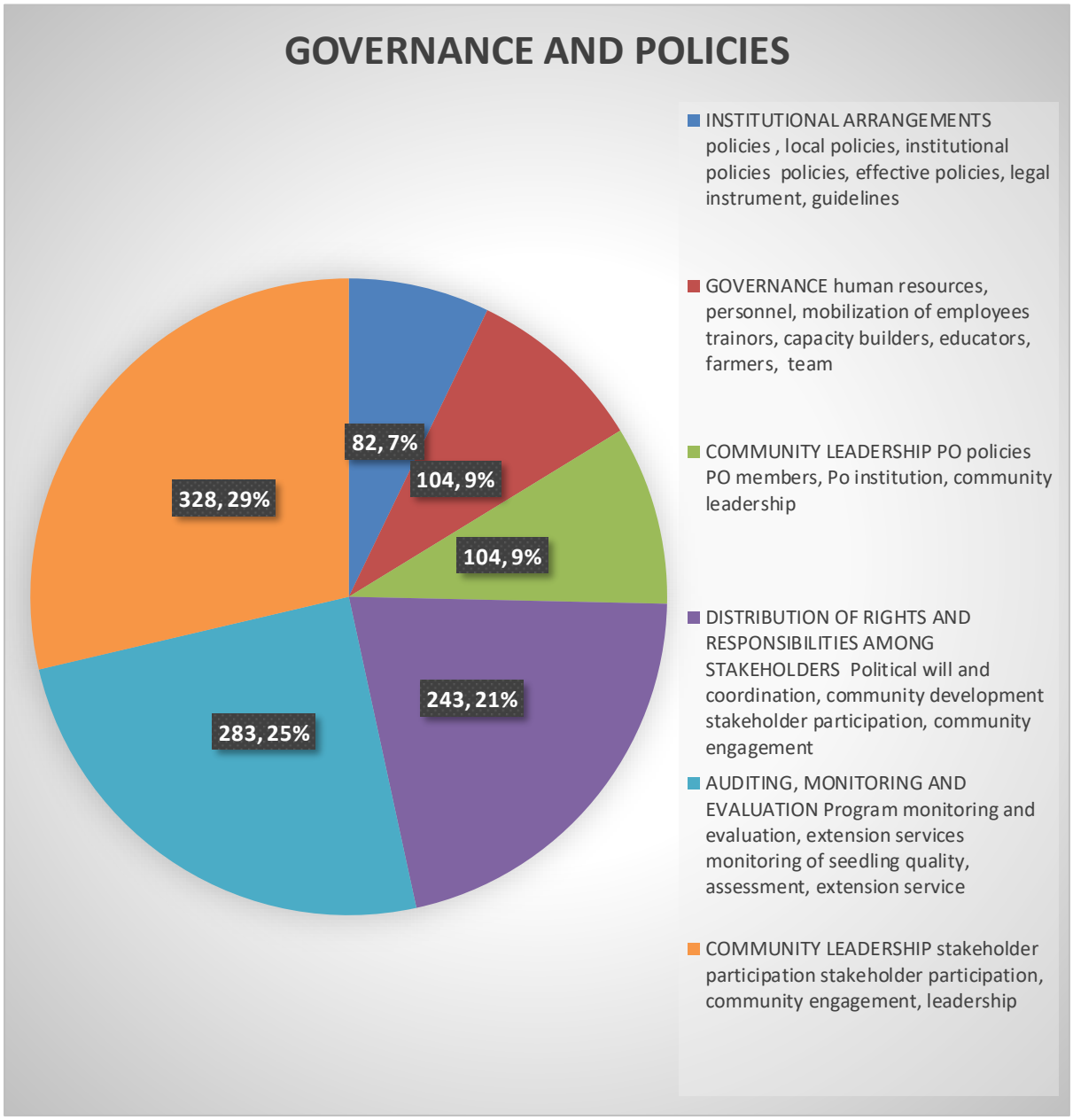

Table 9.5 are factors described in various papers affecting the success of NGP. The table indicates the positive and negative success of NGP in all four factors that contribute to the effectiveness of NGP. Furthermore, Table 5 shows the summary details of NGP's success extracted from textual data of each study.

TABLE 9.5 Success factor of NGP across studies.

			SUCCESS FACTOR							
Method	Context of Publication		ENVIRONMENTAL		SOCIAL		ECONOMIC		INSTITUTIONAL	
			(+)	(-)	(+)	(-)	(+)	(-)	(+)	(-)
Ramel D. Tomaquin (2022)	Survey	Paper	*		*		*		*	
Caesar B. Cororaton (2016)	Quantitative Assessment	Article	*		*		*			
Nestor Gregorio1 (2016)	Survey	Paper		*	*		*			*
Melanie P. Moncada (2019)	Survey	Article	*		*		*		*	
Nestor Gregorio2 (2020)	Case study	Article		*	*		*		*	
Rongie C. Abella (2019)	Evaluation	Article	*		*				*	
Danilo C. Israel (2013)	Survey	Discussion Paper		*	*		*		*	
Henry Goltiano, et al (2021)	Mixed Method	Article		*		*		*		*
Tonie O. Balangue (2016)		Report		*	*				*	
John Herbohn (2017)	Survey	Report		*		*				*
Cagalanan (2016)	Evaluation	Report	*		*		*		*	
Enoc (2022)	Case study	Article	*		*		*		*	
Perez (2020)	Case study	Article		*	*		*		*	
Kurt von Kleist (2019)	Case study	Article		*		*		*		*
Danilo Israel (2016)	Evaluation	Paper	*		*			*	*	*
Merced (2020)	Survey	Paper	*		*		*		*	
Oliveros (2022)	Survey	Paper	*		*		*		*	
Kanchana Wiset (2022)	Case study	Article	*		*		*			*

TABLE 9.6 Summary of positive and negative frequency of NGPs effectiveness as a forest management approach.

THEMES	*Positive (f)*	*Negative (f)*
ECONOMICS	43	14
ENVIRONMENTAL	255	283
INSTITUTIONAL	142	127
SOCIAL	218	108
Grand Total	**658**	**532**

X. ANALYSIS AND DISCUSSION

The efficiency of NGP as a forest management technique was demonstrated through the evaluation of various literature, as shown in Table 5. This evaluation focused on effectiveness research that highlighted optimal management practices published between 2011 and 2012, with a specific emphasis on how NGP adoption affected the four previously indicated components. The study of coded literature yielded a descriptive assessment of the potential environmental, economic, social, and institutional implications of NGP in Philippine Forest management.

The literature on NGP's effectiveness illustrates the diversity of issues and considerations underlying Philippine Forest management.

The environmental component's most common and specific themes included forest plantation development and the manufacturing of high-quality seedling materials for planting. These themes shape the content of the plan. It has been observed that in most cases, a lack of testing and evaluating seedling quality leads to the spread of low-quality seeds. Furthermore, a lack of assistance from stakeholders contributes to the spread of low-quality seeds used in planting activities. In some instances, NGP was successful at the site level, but the overall environmental output, records show otherwise.

The economic component highlighted most frequently equal distribution of work opportunities among the People's Organization, as well as local community participation in the forestry initiative. POs may get disinterested in the NGP if they are not provided with other livelihood projects to improve their socioeconomic standing. Because most local farmers understand the program's limited financing to support their forestry initiatives, family members frequently share tasks. The husband frequently

works off-farm, leaving the ladies to spearhead reforestation efforts, including monitoring the communal agroforestry farm. Furthermore, themes such as extension services, local farmer participation in the development and implementation of reforestation programs, local community perceptions of the NGP program, and capacity-building were the most frequently mentioned in the social component.

The provision of extension or support services, such as training, before, during, and after the establishment of forest plantations would help farmers go forward, ensuring the program's sustainability. Consequently, the NGP is becoming a successful program. Furthermore, allowing the Pos to engage in decision-making not only during the design phase of establishing the forest plantations, such as participation in species-matching and site analysis and evaluation, but also during maintenance up to the closing evaluation of the plantations, will give a positive perception that the program is beneficial to them and the environment, increasing their commitment to participate in more reforestation programs in the future.

The institutional component demonstrates a pattern in reports and monitoring, as these are featured the most frequently. Along with reports and monitoring, the most often mentioned topics were resource allocation, evaluation, and contracts. Transparency in reporting site data is crucial to NGP's effectiveness, as it will help to enhance the standards being implemented in forest plantations. Proper monitoring and evaluation, which is a recurring issue in the system, must be properly emphasized. Setting up the appropriate criteria for monitoring and assessing best practices will ensure the program's effectiveness and sustainability. If deviations from the criteria are discovered throughout the monitoring and evaluation process, the current criteria must be modified to improve the system. Furthermore, the success of the NGP is dependent on effective resource allocations, which will support all operations at both

the local and national levels.

Tables 5 and 6 demonstrate how textual data can help generate NGP's management process and implement best management practices. The analysis and discussion were validated with the IPO model, as shown in the tables below. It defines concepts that correspond to different phases, stages, and steps in the NGP life cycle. The studied textual data revealed three (3) phases: planning, execution, or implementation, and closing. These phases eventually led to the definition of stages. During the Planning phase, processes such as designing or developing NGP strategically, planning the execution, and allocating resources tactically were demonstrated. The execution phase depicts the stage at which NGP actions are appropriately executed or implemented. The last phase, or closing phase, depicts the stage of delivering and evaluating NGP operations. All of these are vital to the success of NGP's program of reforestation.

The table below showcases the details of generating knowledge for the improvement of NGP's forest management best practice).

TABLE 10.1 Knowledge generation for the improvement of NGP's forest management practices

Topics	**Issues/ Problem** (extracts from sample literature)	**Goal**	**Scope**
Establishment of forest plantation	The preliminary surveys revealed the lack of internal PO policies and weak governance, failed livelihood projects, limited social preparation, inadequate criteria of DENR for restoration success, and prevalence of low-quality seedlings as primary factors for the poor results of past restoration initiatives in the community.	To establish a successful forest plantation that will yield high-quality trees	Planning Development of performance criteria
	.. initiatives were largely top-down pay-for-labor schemes with poor outcomes (Pulhin et al., 2006).		Execution Monitor progress
	timber species planted are the same in most sites. Most species planted are softwoods that have low economic value as timber.		Planning Design Development
	The top leadership of DENR made plans that did not suit the realities on the ground. They prescribed the species to plant without consulting local farmers.		Planning Design evaluation

	While the DENR at the national level revealed the number of seedlings used and the area of land planted, reports on seedling survival and growth performance are lacking (Israel and Arbo 2015).		Execution-Monitor progress
	Accredited seedling producers (i.e., accredited private nursery operators and NGOs) having seedling production contracts with the DENR also engage in the purchasing of seedlings from unaccredited nurseries. Approximately 80 % of accredited private nurseries included in the study have purchased seedlings from unaccredited seedling suppliers.		Execution-Control evaluation
Production of High Seedling material for planting	Purchasing seedlings from private seedling producers removes the opportunity for the PO to derive income from seedling production.	To produce high-quality seed material for the high survival rate of plants	Execution-Allocation modification
	purchasing seedlings at distant locations resulted in seedling damage during transport and missed opportunities for farmer groups and communities.		Execution-Control evaluation
	One reason behind the non-attainment of targets in many regions was that desired seedling survival rates of 97 percent were not attained.		Planning-Development of targets and milestones
	Some funds were utilized for purposes other than their intended objectives, which resulted in no seedlings being produced because no funds were allotted for the maintenance of the project.		Planning-development of resource allocation criteria, development, and evaluation
	Because of rushed implementation, CFPBA could not produce enough seedlings thus production of seedlings was bid out by DENR and was won by NGOs based in distant locations to produce seedlings. Obtaining seedlings far from the project site has many disadvantages that include site-species mismatch, seedling damage during transport, and loss of income opportunities to local POs who could have produced the seedlings themselves (Gregorio et al. 2016) if given enough time.		Execution - modification of targets and milestones
	The limited sources of high-quality germplasm, nursery operators' limited information on the attributes of high-quality planting materials, and lack of knowledge about high-quality seedling production technologies contributed to the widespread production of low-quality seedlings.		Execution-control evaluation
	. The lack of seedling quality checks makes the government's bidding scheme for seedling purchases prone to favoring the proliferation of low-quality seedlings that are usually sold at lower prices.		Execution-Monitor progress
	No established support services for planting maintenance including infrastructures ex. Additional equipment like power sprayer and two-way radio for foot patrollers, fertilizer application.		Closing-Development of support criteria
	Assessment of seedling survival of 2012 NGP plantations in the Philippines undertaken by another government agency revealed an average seedling survival rate of 1 year after establishment of only 61 % (COA 2013).		Execution-control evaluation

A. Economic component

Topics	Issues/ Problem (extracts from sample literature)	Goal	Scope
Equal Distribution of Job opportunities	There was practically no alternative livelihood project introduced to provide participating CFPBA members with a sustainable income source.	To provide impoverished farmers and residents create equal opportunities of income generating activities	Closing - Support evaluation
Participation of Local Communities/individuals in the reforestation program	Recognizing the limited financial benefits, particularly at the early stage of the project, husbands engaged in off-farm jobs, leaving the wives to lead the implementation of restoration activities, including nursery seedling production, tree plantation establishment, and management of the communal agroforestry farm.		Execution- allocation modification
	No community organizing occurs in the NGP, unlike in previous CBFM projects- PO members do not attend PO meetings		Execution - Coordination and Control

B. Social Component

Topics	Issues/ Problem (extracts from sample literature)	Goal	Scope
Extension services to create an impact on local communities	Little or No extension services to open opportunities for the communities	To provide additional extension services to the local communities and farmers that will provide income sources or additional knowledge on plantation managemen t	Closing- support evaluation
	Without sustainable alternative livelihoods that can carry upland farmers forward after the end of a program, the economic benefits that accrue to them will be transient and inconsequential. Upland farmers struggling with poverty exploit forests without thought of adverse consequences just to be able to survive (Ajake et al. 2011; Aliyu et al. 2014), negating whatever gains restoration programs attained.		Planning- development of resource allocation criteria
Involvement of local farmers in the planning and implementation of forestry activities	The communities were seldom consulted as to what species they would prefer to grow.	To involve farmers and POs in the planning process of establishing forest plantations, including providing training necessary for them to be equipped with the right knowledge of plantation stewardship	Execution - Coordination and Control
	lack of social preparation to improve the capacity of the PO to develop and implement local policies.		Planning- development of basic activity and resource-based plans
	NGP planners made blanket recommendations without soliciting ideas from locals. DENR ordered the planting only of indigenous species, even in areas where they were not appropriate.		Execution- Control evaluation
	Smallholder farmers were primarily concerned about their livelihoods, and they did not have prior experience in community decision-making and resource management (Cagalanan, 2015).		Planning- Development of performance criteria
	The POs implementing NGP projects undertook reforestation activities according to contractual agreements, but without the necessary devolution of power to influence decisions, resulting in the POs being obligated to implement approaches that do not accommodate local conditions and community		Planning - Plan development

	preferences.		
Perception of local communities in the improvement of their livelihood	The overall improvement in their SES was negligible, and it was imperceptible. This is consistent with the findings of Carig (2012) that the livelihood and income of the beneficiaries of the CBFM Program implemented in Nueva Ecija, Philippines "barely improved" and that "the CBFM program brought various opportunities to the beneficiaries… but these were not enough to improve tenure holders' income."	To increase the positive perception of local communities and farmers towards the impact of NGP-established forests on the environment	Termination- review process development
	The CFPBA-member respondents attributed the failure of the NGP to substantially improve their socioeconomic status to flaws in the implementation of the NGP.		Termination- review process development
	The NGP has become very target-oriented in terms of hectares planted. There is a perception among those involved in the program that the NGP's job is limited to planting the required hectare coverage and less on the attainment of the other program targets.		Termination- Support evaluation
	Our interviews uncovered sentiments within the DENR that regard communities as unable to make substantial program contributions, consigning them to simply a labor force.		Termination- Support evaluation
	The study illustrates the importance of a sustainable alternative livelihood component, local farmers' involvement in planning and implementation, and strong extension service so that restoration programs can create an impact on the communities they aim to help. Despite having improved their socioeconomic status statistically, CFPBA members did not feel the improvement and considered the NGP a failure because the NGP failed to heed lessons from past restoration programs, which if observed, could spell the difference in the outcomes of the NGP.		Support- Development of support criteria.
Training for local farmers in forest establishments and maintenance	NGP having limited funds to support the capacity-building of POs to produce high-quality planting materials and assigning seedling production to experienced private seedling producers and NGOs is considered by the DENR as the safest way to quickly satisfy their high-quality seedling requirement in the NGP.		Support- basic maintenance and liability perception.
	Lack of identification of training needs of PO members and absence of training and capacity building		Support- basic maintenance and liability perception

C. Institutional Component

Topics	Issues/ Problem (extracts from sample literature)	Goal	Scope
Reports and Monitoring of established plantations	While the DENR at the national level revealed the number of seedlings used and the area of land planted, reports on seedling survival and growth performance are lacking (Israel and Arbo 2015).	To evaluate and access plantation sites at a site level with enough personnel and funding to ensure managemen	Closing modification of performance criteria
	Since monitoring and evaluation appear to be a recurring problem in reforestation programs, this portion of the implementation plan of the NGP should be spelled out. For instance, specifically who at the local, regional, and national levels will conduct the monitoring and evaluation and how they are chosen? Who will monitor the monitors? If independent third-party monitors are to be engaged,		Closing modification of performance criteria

	who are they and how are they selected?	t activities are efficiently undertaken	
	The quality of seedlings on subsequent production runs is less regularly monitored, due to a lack of DENR personnel, and hope that nursery operators conscientiously comply with the requirement to produce high-quality planting materials.		Closing modification of performance criteria
	No regular inspection is done. Inspection is done only during billing and payment of the services of the PO members.		Closing Review evaluation
	No record of the sequential implementation of activities with an inspection of the quality of every activity and its output		Execution- Monitor progress
Resource allocation	Many POs lacked financial resources to establish nurseries that met the required standards.	To allocate resources (financing, personnel) for the program to continue efficiently	Planning- development of resource allocation criteria
	Delayed disbursement of funds adversely affects the restoration success, as shown in the government-funded NGP project of the PO that commenced in 2017.		Planning- allocation evaluation
	NGP having limited funds to support the capacity-building of POs to produce high-quality planting materials and assigning seedling production to experienced private seedling producers and NGOs is considered by the DENR as the safest way to quickly satisfy their high-quality seedling requirement in the NGP.		Planning- development of resource allocation criteria
Monitoring and evaluation	The set of assessment criteria for seedling quality includes seedling health (leaf color and absence of infestations), size of seedlings (height and stem diameter), stem form, root form, sturdiness, age of seedling, and sun hardening state. However, details on how the criteria should be applied are absent.	To provide guidelines in the modification of performance criteria as well as support criteria	Closing review evaluation
	PENRO, inspection was delayed due to many reasons. There were occasions when the PENRO's Inspection and Acceptance Committee (IAC), which inspects and reports on the PO's accomplishments, failed to visit at an agreed inspection schedule. When the IAC finally came, seedlings had already died due to suppression by cogon grass. As a result, CFPBA members had to undertake another round of weed removal using additional resources from the group.		Closing support evaluation
	Inspection delays exposed plantations to damage like fire which resulted in the CFPBA using their resources to replace burned seedlings. The DENR would provide financial assistance for the cost of seedlings for replanting only after one burning incident. There were cases when plantation fires occurred several times within the contract period.		Closing support evaluation
Contracts	However, the delayed approval of the project contract resulted in practices that contributed to less desirable project outcomes.	To provide guidelines in the modification of performance criteria as well as support criteria	Planning the development of resource allocation criteria
	NGP having limited funds to support the capacity-building of POs to produce high-quality planting materials and assigning seedling production to experienced private seedling producers and NGOs is considered by the DENR as the safest way to quickly satisfy their high-quality seedling requirement in the NGP.		Execution Allocation modification
	Although POs with contracts to purchase seedlings from other nurseries are uncommon, seedlings from unaccredited seedling producers enter the NGP seedling supply system through this scheme.		Execution Allocation modification

	The accreditation process involves the examination of the quality of seedlings of the supplier at the time of application for accreditation.		Execution Monitor Progress

Table 8 below shows how the effectiveness of forest management practices is evaluated through the use of the IPO model.

Table 10.2 IPO Model of Evaluating Effectiveness

TOPIC: PHASE 1 - PLANNING THE ESTABLISHMENT OF TREE PLANTATIONS				
GOAL: To create successful tree plantations to supply plant materials for tree-planting activities				
INPUTS (based on content analysis of textual data)	**OUTPUTS**		**OUTCOMES**	
	Activities	**Participants**	**Short Term**	**Long Term**
STAGE 1: Designing NGP's strategy to establish tree plantations.				
1. Strategy for the establishment of Tree plantations	Creating goals and objectives (NGP)	DENR, Stakeholders, PO	Creating basic designs for forestry initiatives	Design Guidelines for developing tree plantations
2. Performance criteria	Developing the performance criteria for the establishment of tree plantations	DENR, Stakeholders, PO	Setting the foundation for assessment and evaluation	Design Guidelines for developing tree plantations
3. Development and evaluation	Defining criteria for assessing and evaluating the accomplishment of tree plantations	DENR, Stakeholders, PO	Baseline data for assessment and evaluation	Design Guidelines for developing tree plantations
STAGE 2: Planning the effective and efficient execution of the establishment of a tree plantation				
1. Resource base plans	Providing NGP's forest planting needs and requirements through stakeholder and POs conference and field discussion groups.	Stakeholders, Peoples Organizations (PO)	Implementing need-based training with adequate tree establishment support and capacity building	Developing a support resource system for the establishment of tree plantations.

2. Targets and milestones	Establishing a baseline for targets and milestones	Stakeholders, Peoples Organizations (PO)	Attainable targets	the high success rate for forest plantation
3. Plan development and evaluation	Planning how to examine and evaluate ground-level areas to be planted to determine plant species matching and other requirements for high output of plant materials and high seedling survival rate.	Stakeholders, Peoples Organizations (PO)	detailed data for plantation establishment will be available	Program sustainability
STAGE 3: Allocate resources tactically				
1. Design and activity base plan	1. Identifying what is needed to support the establishment of tree plantations	DENR, Stakeholders	Establishing need-based criteria for resource allocation	Implementing guidelines for resource allocation
2. Resource allocation	2. Identifying resource allocation criteria	DENR, Stakeholders	Identifying resources for establishing tree plantations	
3. Resource development and evaluation	3. Developing resource allocation strategies	DENR, Stakeholders	Establishing guidelines for resource allocations	

ASSUMPTIONS	**EXTERNAL FACTORS**
1. Tree plantations will increase 2. Forest cover will increase 3. NGP's reforestation program is successful 4. Improved socio-economic status	1. Environment 2. Stakeholders participation 3. Resource allocation

TOPIC: PHASE 2- IMPLEMENTING THE PLANS FOR THE ESTABLISHMENT OF TREE PLANTATIONS FOR PLANTING TREES IN BARREN FOREST AREA				
GOAL: To create successful tree plantations to supply plant materials for tree-planting activities				
INPUTS (based on content analysis of textual data)	**OUTPUTS**		**OUTCOMES**	
	Activities	**Participants**	**Short term**	**Long Term**
STAGE 1: Executing effectively and efficiently the establishment of tree plantation for planting trees in barren forest area				
1. Coordinate and control	1.a to organize communities and accredited Pos for awareness of their duties and responsibilities	DENR, LGU, Stakeholders, Peoples Organizations (PO)	Implementing need-based training with adequate support for capacity building	Establishing support resources for capacity building
	1.b Creating structures to know duties and responsibilities assigned to individuals/ groups participating in implementing the plans		Standards and implementing guidelines	Increase the success of the program
2. Monitoring Progress	2.a Creating monitoring standards that are measurable to ease assessment and evaluation		attainable targets	the high success rate for forest plantation
	2.b Communicating visions, inspiring commitment, providing directions, and resolving conflicts		Expanding relationships between stakeholders and PO	High self-esteem of stakeholders
3. Targets and milestones	3. Modifying targets and milestones based on data gathered on the ground level		Attainable and feasible targets and milestones	Increase the success of the program
4. Allocation	4. Modifying resource allocations based on the needs and requirements of ground-level		List of identified resources to support the program	Continuity and sustainability of the reforestation program

5. Control evaluation	5. Monitoring performance against the established goals and taking corrective action when necessary. It includes assessing and evaluating standards, measuring performance, comparing actual results with the standards, and implementing changes if deviation occurs.		detailed data for plantation establishment will be available	Program sustainability
ASSUMPTIONS		**EXTERNAL FACTORS**		
1. Tree plantations will increase 2. Forest cover will increase 3. NGP's reforestation program is successful 4. Improved socio-economic status		1. Environment 2. Stakeholders participation 3. Resource allocation		

TOPIC: PHASE 3- CLOSING THE DELIVERY OF SUCCESSFUL TREE PLANTATIONS THAT CAN SUPPLY HIGH-QUALITY PLANT MATERIALS				
GOAL: To deliver successful tree plantations to supply high-quality plant materials for tree planting activities				
INPUTS (based on content analysis of textual data)	**OUTPUTS**		**OUTCOMES**	
	Activities	**Participants**	**Short term**	**Long Term**
STAGE 1: DELIVER TREE PLANTATIONS SUCCESSFULLY				
1. Delivery verification	1. Verify Forest plantation activities and output against NGP's existing reforestation activities	DENR, LGU, Stakeholders, Peoples Organizations (PO)	Well-fitted standards and guidelines	Increased and quality output
2. Deliverable modifications	2.a Creating monitoring standards that are measurable to ease			

	assessment and evaluation			
	2.b Communicating visions, inspiring commitment, providing directions, and resolving conflicts			
3. Modification of Performance criteria	3. Modifying targets and milestones based on data gathered on the ground level			
4. Evaluation	4. Assessing the effectiveness of the process, as well as the outcomes achieved. This includes gathering feedback, analyzing performance metrics, identifying areas for improvement, and adjusting the process as needed			
STAGE 2: REVIEW THE PROCESS				
1. Process	Reviewing and evaluating the entire process to identify variations from the goals and objectives	DENR, LGU, Stakeholders, Peoples Organizations (PO)	Well-fitted standards and guidelines	Increased and quality output.
2. Development	Review and evaluate the development plan of the program			
3. Evaluation	Review and evaluate evaluation criteria and adjust to adapt to the data on the ground			
STAGE 3: SUPPORT TREE PLANTATIONS AND PLANTING ACTIVITIES				
1. PO perception	Improve basic maintenance and liability perception of stakeholders and POs	DENR, LGU, Stakeholders, Peoples Organizations (PO)	Support service after forest plantation activities and maintenance.	Increased success of the program
2. Support criteria	Develop comprehensive support criteria for the continuity and			

	sustainability of the program			
3. Support perception development	Develop support to provide positive perception of the program among stakeholders and the POs			
4. Support evaluation	Develop support in the evaluation and assessment of the project			
ASSUMPTIONS		**EXTERNAL FACTORS**		
1. Tree plantations will increase 2. Forest cover will increase 3. NGP's reforestation program is successful 4. Improved socio-economic status		1. Environment 2. Stakeholders participation 3. Resource allocation		

XI. RECOMMENDATION AND CONCLUSION

The study's findings show that NGP forest best management practices have a significant influence on both the local community involved in reforestation programs and the environment. While effectiveness studies of the forest's best management practices are site or regional-specific, they should all show a consistent result and that the best practices based on physical principles remain effective over time. The success of the best practices identified in this study has offered crucial information and insights into how NGP meets the broader reforestation goals established during its development.

The efficiency of NGP is clear throughout the collected textual data. It was established that tree plantation should receive significant attention from the program's conceptualization through the planning, execution, and closing phases. Support services should be offered in all elements of reforestation initiatives, not only in isolated instances. Collaboration between stakeholders and People's Organizations is also vital and should be prioritized at all stages. Resources should be allocated from conception to completion, and even beyond the final phase, to ensure continuity and sustainability. Continued monitoring and evaluation of activities and output throughout and after implementation, using well-designed key performance indicators with measurable components will boost NGP's success rate in meeting its objectives.

The primary findings of effective forest management best practices are presented in a PHASE- STAGE -ACTIVITY hierarchy as shown below which were derived from the IPO model tables presented previously.

1. PLANNING PHASE
    a. Designing tree planting initiatives

i. Designing- Strategically create tree plantations by creating realistic goals and objectives that will serve as the foundation for the design guidelines of the forest management approach. NGP must initiate Need analysis by conducting a thorough assessment of environmental conditions, including soil, hydrology, biodiversity, and climate change impact. Foster stakeholder engagement to leverage expertise, funding, and networks. Site selection, species selection, and community empowerment are also important.

ii. Performance Criteria- establish key performance indicators that will serve as standards for evaluating plantation sites and their planting activities, including an assessment of the entire site's productivity. Also establish baseline values for each performance metric to assess the effectiveness, sustainability, and ecological integrity of the forest management practices.

iii. Development and evaluation: Create explicit rules for evaluating and assessing each site planting under the NGP.

b. Planning effective and efficient execution or implementation for developing forest planting sites.

i. Planning the NGP resource base includes establishing the program's needs, evaluating not only the demographics of site plantations but also site selection criteria, and conducting macro and microsite data analyses to give baseline data.

ii. Setting Targets and Milestones- Create baseline data for attainable and plausible targets and milestones. This is where all stakeholders, including the People's Organization, must work together to establish clear,

attainable goals and milestones.

iii. Developing and evaluating- Plan how to carry out the program's evaluation and assessment criteria to avoid confusion at the local, national, and regional levels.

Engaging key stakeholders, including local communities, Indigenous people, government agencies, NGOs, Businesses, academia, and civil society, the planning and decision-making process.

c. Allocate resources tactically.

i. Designing and resource-based planning- Determine goals, strategies, and specific activities, like initial site assessment (ecological assessment, social assessment, developing zoning maps and management maps based on ecological and socio-economic considerations.

ii. Developing resource allocation criteria- Identify criteria for distributing resources to meet the goals and requirements of the reforestation program. This comprises personnel financial resources, and other resources across various activities like locating potential suppliers of supplies for tree planting initiatives.

iii. Allocation development and evaluation- For the development, conduct a comprehensive assessment to identify key needs, priorities, and opportunities. Determine available resources, including financial, human, and technical capabilities. Regarding allocation evaluation, define key performance indicators to measure the effectiveness and impact of allocated resources. Create and establish strategies for the efficient and clear allocation of resources for reforestation initiatives.

2. EXECUTING/ IMPLEMENTING PHASE

a. Coordination and Control

i. Organize communities and accredited POs to fulfill their obligations and responsibilities as stewards of reforestation farms and planting sites. Coordinate efforts among government agencies, and other stakeholders to facilitate information sharing, joint planning, and policy coordination. Involve local communities and Indigenous people in forest management activities, especially in decision-making and planning.

ii. Create frameworks that provide a clear distribution of duties and responsibilities. Develop clear and detailed forest management plans, guidelines, and standard operating procedures to guide implementation activities.

b. Monitoring Progress

i. Create measurable monitoring criteria and metrics to facilitate the assessment and evaluation of work output concerning the NGP's goals and objectives.

ii. Collect baseline data to establish the initial status of key indicators before implementing forest management interventions. This can be used as monitoring data to inform adaptive management decisions such as adjusting management strategies, reallocating resources, and implementing interventions.

iii. Continuous interaction and collaboration among stakeholders, including regular monitoring activities to track changes in key indicators. Executing these activities will communicate visions, inspire commitments, provide guidance, and settle conflicts.

c. Modification of Targets and Milestones

   i. Conduct regular reviews of progress to modify targets and milestones based on data collected during the monitoring phase of specific forest plantations.

d. Modification of Allocations

   i. Modify the assigned resources based on the data acquired to meet the current demands of forest plantings, including financial assistance to forest farmers, to ensure the sustainability of forest plantations.

   ii. Solicit input, feedback, and perspectives on the appropriateness of existing targets and the need for modifications. And implement modified targets and milestones effectively, ensuring that they are integrated into work plans, budgets, and operational activities.

e. Control Evaluation

   Systematic control evaluation is crucial for effective forestry performance monitoring. This involves **evaluating the use of standardized protocols and procedures** to ensure consistent and reliable compliance monitoring. We also need to **monitor forest farmers' performance and forest planting production** against specified targets. When actual outcomes deviate from planned standards, **prompt remedial action** must be taken.

   i. Evaluate the effectiveness of enforcement measures on illegal activities and the extent to which they contribute to behavior change.

3. CLOSING PHASE

a. Deliver the forest plantations and their products.

   i. Verification of deliverables- Verify deliverables of tree plantations considering the output of forest plantations against the overall

management plan and monitoring protocols. It is in this stage that stakeholders' feedback is incorporated into the generated reports to know if additional reforestation measures are necessary and if concerns are mitigated.

ii. Modification of deliverables against the overall plan- Adjust management plans based on current information or changes in the environmental conditions. This could involve altering planting schedules, or other management strategies. Additionally, technological improvements and scientific technologies are incorporated like remote sensing techniques for forest inventories and employing GIS for spatial analysis. Modifying the program deliverables will have an impact on mitigating risk potential that may harm the program.

iii. Modification of performance criteria- this stage involves adjusting the standards or benchmarks used to evaluate the effectiveness of forest management activities. This modification may occur for several reasons such as changes in environmental conditions, evolving stakeholders' priorities, or advancements in scientific knowledge.

iv. Deliver evaluation- This stage involves assessing the effectiveness and efficiency of delivering program outcomes, and the output generated, including stakeholders' and PO's insights, which will identify lessons learned, best practices, and areas of optimization. Overall, delivery evaluation is essential for ensuring accountability, transparency, and continuous improvement in the delivery of program outcomes and services.

b. Review the process.

   i. Basic review of the process- this involves systematically reviewing the NGP forest management process such as Reviewing program objectives and scope, assessment implementation including impact assessment, financial performance, and stakeholders' engagement.

   ii. Review the design- Develop an action plan outlining specific steps and timelines for implementing identified improvements and establishing mechanisms for monitoring the process and evaluating the effectiveness of the improvement efforts over time.

   iii. Review evaluation- continuous monitoring and reviewing of forest management practices and outcomes, incorporating lessons learned from previous reviews into future decision-making processes.

c. Support services.

   i. Basic maintenance and liability perception- This entails maintaining basic forest infrastructure such as roads, trails, firebreaks, and bridges to guarantee accessibility and safety for forest operations. Equipment, facilities, and site management must be always maintained. Evaluating risks and hazards allows you to recognize liabilities and put mitigation measures in place. Safety protocols, insurance coverage, and legal compliance should be emphasized to improve operating efficiency.

   ii. Develop support criteria- At this stage, it is critical to assess the quality and usefulness of technical assistance provided not only to forest managers but also to forest farmers and other participants in the reforestation program. Technical support, such as training, capacity building, and advising services, are critical. In addition, at this stage,

you evaluate the appropriateness, transparency, and efficiency of financial resources allocated to support forest management activities, as well as the effectiveness of the financial framework for resource mobilization. Policy and regulatory frameworks supporting sustainable forest management practices, such as laws, rules, guidelines, and incentives, should be assessed for clarity, coherence, and enforceability of forest policies. The availability of essential infrastructure and technology, such as roads, bridges, communication networks, and monitoring equipment, should also be evaluated.

iii. Develop support perception- Increase stakeholders' awareness, attitudes, and beliefs about the necessity, efficacy, and advantages of various support actions for sustainable forest management. Provide educational materials, workshops, and outreach initiatives to help stakeholders understand the role of support services. Demonstrating successful examples of support activities in action via demonstration projects and pilot initiatives. Engage all participants in the design, implementation, and evaluation of support activities to promote ownership, collaboration, and accountability. Invest in efforts that increase stakeholders' knowledge, skills, and resources. Provide incentives and recognition to individuals who actively participate in and contribute to supporting activities.

iv. Support evaluation -Assess the efficacy, effectiveness, efficiency, and impact of support services and mechanisms that aid in facilitating the execution of forest management activities through examining objectives, aspects of support services, data collection methods,

stakeholder engagement, performance metrics, feedback, and follow-ups.

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