Asia Pacific Journal of Multidisciplinary Research
P-ISSN 2350-7756 | E-ISSN 2350-8442 | Volume 2, No. 6 | December 2014

Services in the Forests: How Can Conservation and Development Be Reconciled?

Raymund B. Gemora, *Ed. D.*
West Visayas State University – Janiuay Campus
Janiuay, Iloilo, Philippines
raymund_gemora@yahoo.com

Date Received: October 21, 2014; Date Revised: November 24, 2014

Abstract- *This study attempted to examine how conservation and development can be reconciled and if there have been initiatives to demonstrate the ability to encourage forest conservation through market mechanisms involving direct involvement in forestation. The study was a qualitative study. The present study focused on the services in the forests, how conservation and development be reconciled. This study, based on in-depth interview, reveal that to be effective in the long-run, programs have to consider the needs and priorities of forest dwellers, which are indeed beyond market-based incentives; a win-win discourse combining forest conservation and poverty alleviation through appropriate provision may hide vested interests of developed communities. Finally, proving the workability of activities and their quantification for emissions credit will be critical for the launching of reducing emissions from forestation and degradation in the future climate agreement.*

Keywords*: services, forest, conservation, development, reconciled*

I. INTRODUCTION

Rainforests cover only 6 percent of the earth's land surface and yet biologists estimate that half the species of plants, animals and other organisms are found in tropical rainforests, on the word of Edward Wilson, a research professor at Harvard.

Between 1.5 million and 1.8 million species in the world have been described but the true number of living species range from 3.6 million to more than 100 million. The Philippines is part of the 6 percent with tropical rainforests. It is estimated that from 2000 to 2005, the Philippines lost 2.1 percent of its forest every year, the second fastest rate in Southeast Asia (next to Burma) and the seventh in the world. In addition, the Philippines has more than 3,000 native tree species according to the Philippine Tropical Forest Conservation Foundation (PTCF).

The Philippines is originally almost entirely forested, but by the end of the nineteenth century large areas had been cleared for agriculture, notably in the Visayas, where Negros, Bohol and Cebu had already lost much of their forest cover. Agricultural expansion continued throughout the twentieth century, but the most extensive and rapid deforestation was caused by commercial logging in the latter half of the century. This had a particular impact on primary lowland dipterocarp forests, the most valuable commercially, which shrunk from an estimated 10 million ha in the 1950s to only one million by the late 1980s. New logging roads allowed access to farmers and timber collectors, who cleared more forest and prevented the regeneration of logged forest. Civil strife has affected many parts of Mindanao and the Sulu archipelago. Throughout the country, insurgents may have prevented logging and agricultural development, but sometimes they may have promoted these activities, and the deliberate conflagration of forests on Mindanao—associated with insurgency—is a problem, particularly on the Zamboanga peninsula (Philippine Forests, 2011).

Today, forest cover varies considerably across the archipelago but is everywhere drastically reduced—according to satellite data from the late 1980s, Mindoro retained 8.5% forest cover, Luzon 24%, Mindanao 29% and Palawan 54%. In the Eastern Visayas, Samar retained 33%, Leyte 14% and Bohol 6%, and in the Western Visayas, Negros 4% and Panay 8%. These figures are, however, probably overestimates, and only a proportion of the cover estimated on each island was closed-canopy forest. Further forest loss and degradation has taken place since these estimates were made, as a result of *kaingin* farming (otherwise termed 'slash-and-burn' or shifting cultivation), fire-maintained

pasture and the harvesting of non-timber forest products (such as rattans and other palms). These alarming statistics on remaining forest cover fit badly with a Philippines government report which asserted that the country needs 46% of its land area under forest for both its economic and environmental wellbeing. Deforestation has been most extensive in the lowlands, and the lowland-forest species tend to be the most highly threatened. Only a few small fragments of lowland forest remain on Mindoro, Negros and Panay, Cebu is almost completely deforested, and the only substantial forests known to remain in the Sulu archipelago are on Tawi tawi (Philippine Forests, 2011).

The Philippines is both a crisis and a mega diversity area, making it a primacy for conservation. The country's forests are habitat for more than 6,000 plant species and numerous bird and animal species, including the endangered Philippine Eagle and the Visayan warty pig. Forests also act as domicile to some 12 million indigenous peoples. They support millions of Filipinos who depend on them for livelihood. However, despite, or perhaps because of their richness and importance to people, forests confront continuing devastation.

The Philippines is among the countries that are losing their forest cover fast, ranking 4th in the world's top 10 most threatened forest hotspots. If the deforestation rate of 157,400 ha per year continues, the country's remaining forest cover will be wiped out in less than 40 years. The area lost to deforestation every year is twice the land area of Metro Manila (Protect Philippine Forests (2011).

Aside from these, the climate hotspot heightens the risk of an already calamity-prone Philippines. It raises alarm bells for the crucial need for adaptation measures. However, as the country moves into high gear to address the impacts of climate change, the government should not lose site of the opportunities to mitigate climate change as well. One natural resource that can provide not only a *climate cooling effect* but also a *cash compensating contribution* is our forests (Improving Forest Governance and Sustainable Upland Development through Climate Change Mitigation Financing Strategies in Southern Palawan, 2011).

Forests are essential for a stable climate because of their capacity to capture greenhouse gases. Deforestation and land use changes contribute about one fifth of the carbon dioxide emissions that are causing climate change.

They provide essential ecosystem services such as soil and watershed protection, biodiversity conservation and regulation of water flow and local climates. Ultimately, forests are also crucial for local livelihoods, as they provide fuel, food, medicines and shelter. The sustainable use of forests can provide an important source of income and boost rural development. If the forests are destroyed, livelihoods and the future prospects of local communities are jeopardized.

In the Philippines alone, 25 million or 33% of the total population in 2000 live in or near forestlands and are dependent on these for a significant portion of their sustenance. The ancestral domains of the country's 12 million indigenous peoples are also usually located within forestlands (The Threatened State of Philippine Forests, 2012).

At present, there are no consistent strategies and incentives to address deforestation in the Philippines. Efforts to restore forest ecosystems have so far had only limited success. This is because of conflicting land use, unclear rights of use and access to forests, and insufficient participation of the local communities in sustainable forest management. At the same time, government offices and local communities are also handicapped by inadequate capacities.

Commissioned by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and GIZ for overall term 2009 – 2013 under the Department of Environment and Natural Resources (DENR) as the lead executing agency, the Climate-relevant Modernization of Forest Policy, and Piloting of Reducing Emissions from Deforestation and forest Degradation (REDD) project takes a new and cost-effective approach to forest and climate protection. In support of the national REDD-Plus strategy, DENR is starting to use innovative forest conservation activities and applying pilot measures in selected protected forests and the surrounding areas.

Working with local stakeholders it develops a framework to protect and manage forests sustainably, while providing specific incentives to local communities. These include the clarification of land tenure, provision of financial support for forest rehabilitation and reforestation, and establishing agro-forestry and village development systems. The approach includes monitoring and controls, as well as mechanisms to ensure that benefits are shared throughout the pilot sites.

To strengthen existing structures, the REDD project contributes intensive advisory services, capacity building and training to help with the planning and implementation of climate-relevant forest measures. It

also assists with conflict mitigation and in securing land use rights and livelihoods.

Studies have it that 20% of all emissions are from deforestation and land use change and thus it is being argued that if deforestation can be arrested, it will provide immediate opportunity to mitigate climate change at relatively low cost and it would buy time for other technological changes (renewable energy, etc.).

Though many Southeast Asian governments like those of Cambodia, Vietnam, Indonesia and Laos are engaging in capacity building initiatives and pilots on REDD, the Philippine government is yet to take an active role in REDD implementation in the country. As initial support, the National Greening Program (NGP) as a government priority was implemented effective 2011 by virtue of Executive Order No. 26 signed by Philippine President Benigno S. Aquino III**.** The program shall plant 1.5 billion trees covering about 1.5 million hectares by 2016.

On the other hand, a controlled–growth land use development, termed as conservation development, adopts the principle for allowing limited sustainable development while protecting the area's natural environmental features in perpetuity, including preserving open space landscape and vista, protecting farmland or natural habitats for wildlife, and maintaining the character of rural communities. The management and ownership of the land are often formed by the partnership between private land owner, land-use conservation organizations and local government.

The huge advantage of integrating conservation and development is that it can protect species and ecosystems, preventing further habitat fragmentation and loss. By surveying the land and identifying the primary conservation areas where ecosystems, specifically, the forests, are at most risk, communities and livelihoods are created without immense disruption to the environment (Pejchar, et al., 2007).

Deforestation and overpopulation are issues affecting all regions of the world. The consequent destruction of wildlife habitat has prompted the creation of conservation groups in other countries, some founded by local hunters who have witnessed declining wildlife populations first hand. Also, it was highly important for the conservation movement to solve problems of living conditions in the cities and the overpopulation of such places.

Biodiversity is most commonly used to replace the more clearly defined and long established terms, species diversity and species richness. Biologists most often define biodiversity as the totality of genes, species, and ecosystems of a region. According to Adams et al., (2004); Sanderson & Redford, (2003), the goals of maintaining biodiversity and fostering development in poor countries continues to spur lively within the international conservation and development arena.

Likewise, Brockington & Scholfield, (2010) explain that the biodiversity protection and improvement of local livelihoods can be attained simultaneously pervades the policy. Existing studies of conservation funding have focused on a particular geographic region, such as Africa (Castro & Locker, 2000) or Latin America (Halpern et al., 2006), a single year (Bruner, Gullison, & Balmford, 2004; Mansourian & Dudley, 2008).

Many industrial materials derive directly from biological sources. These include building materials, fibres, dyes, rubber and oil. Biodiversity is also important to the security of resources such as water, timber, paper, fibre, and food. As a result, biodiversity loss is a significant risk factor in business development and a threat to long term economic sustainability. Hicks et al., (2008) devote some attention to biodiversity in an extensive analysis of environmental aid from governments and multilateral agencies, but do not drill deeper to consider integrated conservation and development projects nor do they account for biodiversity.

Miller, Agrawal, & Roberts (1980-2007)) systematically examine biodiversity conservation more generally, their paper provides the first comprehensive examination of patterns of foreign aid for integrated conservation and development-type projects globally over the past three decades.

Hicks, Parks, Roberts, & Tierney, (2008) suggest that the aid contract extends beyond sectors and that recipients may be induced to accept environmental aid only if some other type of aid is also a part of the package.

In line with concerns on biodiversity, conservation and development integration, the Congress of the Philippines, 15th Congress House Bill No. 5485 was enacted in 2011 to provide for the protection, rehabilitation, and sustainable management of forest ecosystem. This bill mandated the development and adoption of a sustainable forest management strategy based on national allocation of forest and uses and promotion of land used, protection of existing forest resources and conservation of biodiversity, rehabilitation on development of denuded areas to expand the forest resource based and promote

livelihood and food production activities. This act also provides strategic directions on how forests be served.

In the case of the Municipality of *Janiuay*, as subject of this study, it has remaining forests which are very rich in biodiversity considering that it is part of the Central Panay Mountain Range (CPMR). These forests need to be rehabilitated and managed consistently. Forests and forestlands of *Janiuay* are considered a home of the remaining flora and fauna which are very rare and where most species can be found only in the island of Panay. This natural wealth must be protected, rehabilitated and managed for the future generation.

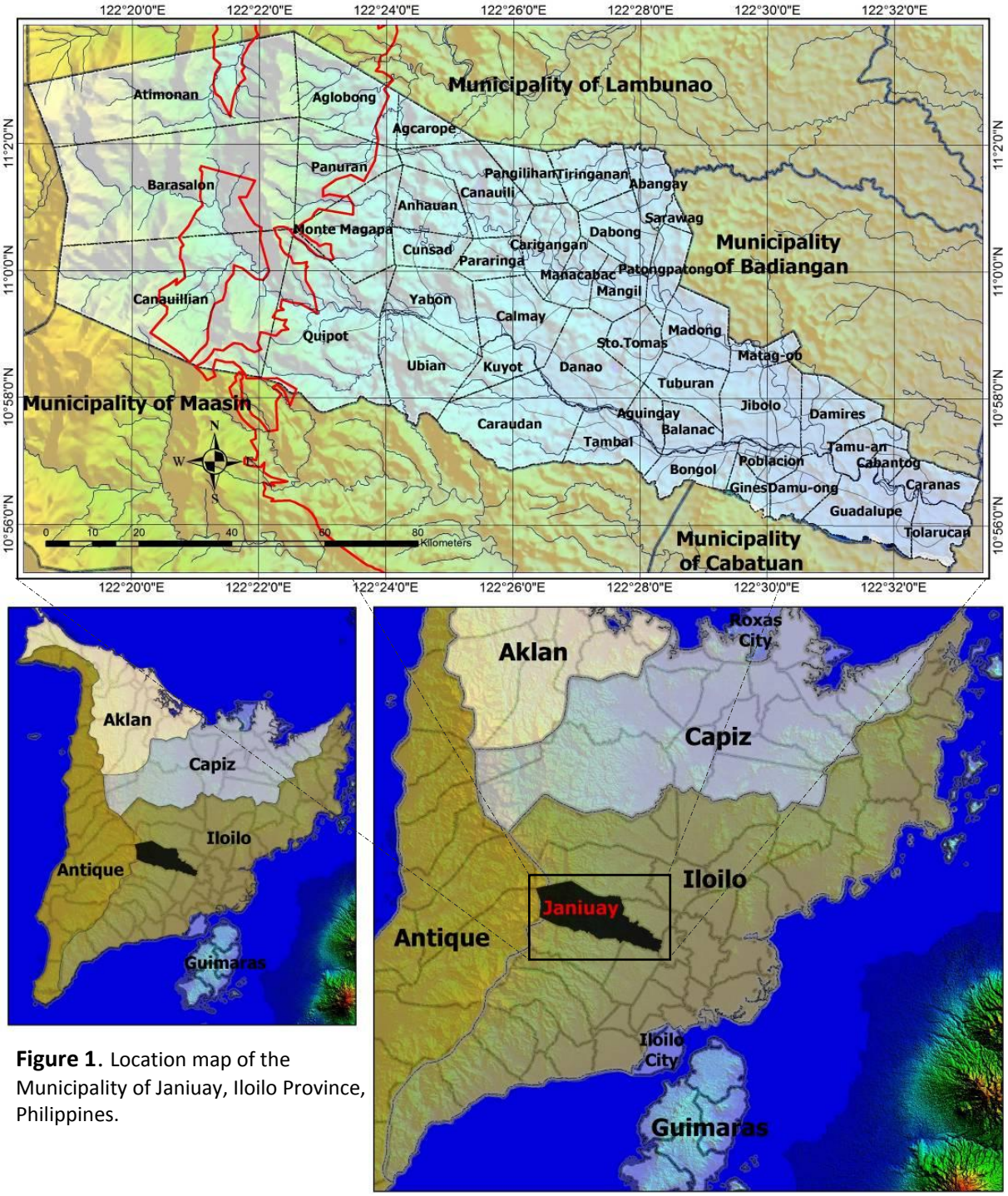

Figure 1. Location map of the Municipality of Janiuay, Iloilo Province, Philippines.

Janiuay is situated in the central part of Panay island, Philippines, with approximately 65,000 people living in 17, 910 hectares, original area based on DENR, almost one-third of the land area is classified as timberland or forestland with 5, 671.37 hectares. Seven (7) of 60 local communities are either fully or have portion within the classified forestland areas. This study attempted to reconcile economic development with environmental conservation in a protected forest area in the Municipality of *Janiuay*, Philippines that included the local communities of *Atimonan, Barasalon, Canauillian* and upper portion of *Barangay Aglobong, Panuran, Monte Magapa* and *Quipot* that are still largely covered in rainforests. The lowland areas that give way to few rolling, hilly rugged mountains and gentle slopes inland, characterize the town's overall outlook.

Of the 65,000 more or less individuals in *Janiuay* based on latest census of population with an average density of 4 persons per ha, *Poblacion* has the highest population because this is the centre of economic activities in the Municipality. Business establishments are also concentrated in this area. Of the seven (7) local communities included in the forestland, *Barangay Quipot* has the most population. There are settlers in the forest and forestlands and some who live outside of the forest zones gather forest products or conduct agricultural activities therein.

Some groups or individual in the Municipality have considerable stake and interest in the forest and forestland, either for direct use or from its service functions. These are the tenure holders, indigenous communities, and other stakeholders (Table 1).

Table 1. Forest-based Stakeholders

Watershed	Forest-based Stakeholders
Suage	firewood gatherers, charcoal makers, furniture makers, chainsaw operators hunters, farmers
Magapa	chainsaw operators, firewood gatherers, charcoal makers, furniture makers, hunters, farmers.
Aglobong-Panuran	charcoal producers, firewood gatherers, furniture makers, chainsaw operators
Atimonan-Cabatangan	chainsaw operators, firewood gatherers, charcoal makers, hunters, farmers.

Roughly 12, 238.63 hectares or 68% of the total land area is currently used for agriculture but only half of the area is fully developed; the remaining area is either open space, pasture lands or under-developed farm lands. The major crops are rice, sugar, corn, root crops, banana, coconut, abaca and mango while, peanuts, vegetables and other fruit trees are also grown as minor crops.

II. OBJECTIVES

The study aimed to explore the *Janiuay* LGU's services to the forests of selected local communities and how conservation and development are reconciled in the area.

Specifically, it aimed to determine the services of the Municipal Environment and Natural Resources Office (MENRO) to the forests among selected local communities in the Municipality of *Janiuay*; to assess the forest conservation program of *Janiuay*'s MENRO; and to relate the services with *Janiuay*'s economic development program.

III. MATERIAL AND METHODS

The qualitative data analysis (QDA) suggested by Seidel (1998) for qualitative methodology was used in the study. His model simplifies the complex process into three components: noticing, collecting and thinking about interesting things. In this study, researchers reviewed the data from observations and interviews and identify the passages related to our objectives, like trust, ties among people, beliefs, values and norms, attitudes towards innovation, organisational capital etc. In other words, we coded the text into the key concepts of our study.

Once they had codified our data, we condensed it into tables fitting each piece into the correct category. Thinking is a process which consists of close examination, comparison, looking for similarities and differences, and raising questions about the phenomena as reflected in the data (Corbin and Strauss, 1990). That means that in the research, the proponents tried to draw some conclusions about how the key concepts of the study are interrelated. They compared and contrasted the data from the different participants in order to find convergences or divergences, which allowed them to

identify groups among the respondents, and treat each group as a collective. Although this account of QDA presents three distinct parts, the process is not linear, as Seidel (1998) remarked, and the process may be iterative (a cycle that keeps repeating), recursive (some parts can call you back to a previous part) and holographic (each step already contains aspects of the entire process). In this case, they started the process with some thought about the link between protected forest and forestlands within the Mount *Amatong* in Barangay *Quipot* that stretches up to Mt. *Singit* in *Barangay Aglobong* going westward to the area of the Central Panay mountain range bordering the provinces of Antique and Iloilo.

The forest line runs across barangays *Quipot*, *Monte Magapa*, *Panuran* and *Aglobong* that typically divides the forestland and the alienable and disposable (A&D) areas. Inside the forestland in the vicinity of *Canauillan*, *Barasalon* and *Atimonan*, alienable and disposable areas (A&D) have been declared by the DENR (Figure 2).

The whole forestland harbors the headwaters of seven (7) river systems, but four (4) are considered the major river systems. These are the Magapa and Suague rivers that drain to the Janiuay area and the *Atimonan-Cabatangan* and *Panuran-Aglobong* rivers that drain to the area of the Municipality of Lambunao.

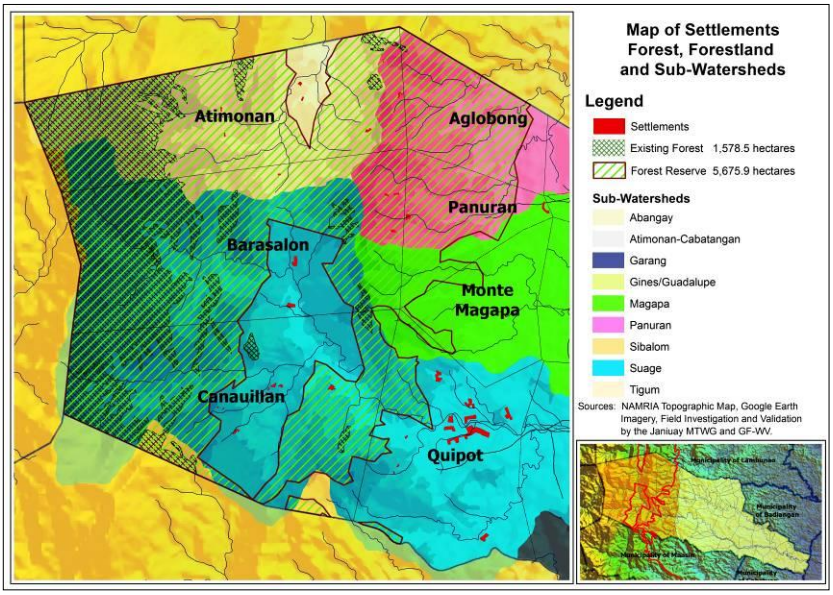

Figure 2. Existing forest, forestland and the sub-watersheds in the upland barangays of Janiuay, Iloilo.

The forestland is 5,675.9 hectares but the remaining forest cover is only 1,578.5 hectares or 27.8% of the forestland. More than 4,000 hectares (72%) of the forestland are used by the indigenous and upland communities for their *kaingin* (otherwise termed 'slash-and-burn' or shifting cultivation), fallows, agro-forestry farms, paddy rice fields, settlements and croplands. Small portions are open grassland and landslide areas. This last development, in turn, had a different form, because they noticed that a different approach was needed for some of the people whose opinions they sought.

IV. RESULTS AND DISCUSSION

The MENRO *Janiuay*, institutionalized only few years ago, is charged with maintaining the municipality's protected forest lands. It is an independent agency structured its speciality in forestry, and overseen by the Department of Environment and Natural Resources (DENR). It has provided services to forests and has the overall responsibility for establishment of *Bantay Gubat* (Forest Guards), stationing on-site leaders, and the implementation of forest ordinances. The MENRO *Janiuay* services include 1) management and protection of all forests under its jurisdiction that include reforestation, tree planting and assisted regeneration, agro-forestry scheme, tree safeguarding, wildlife, flora and fauna preservation, and biodiversity protection; 2) promotion of forestry education and training; 3) enforcement of the conditions and regulations pertaining to logging, charcoal making and other forest utilization activities; and 4) apprehend and prosecute violators of forest laws, regulations and ordinances.

Janiuay forestland was once covered with vast forest vegetation from the area of *Yabon*, *Ubian* and going up to *Canauillian-Barasalon* in the south-western section, and *Canauili* going up to *Atimonan* in the north-western section. However, today large portion of these forests were lost due to human activities. The importance of forest and forestland of *Janiuay* is that, it provides the need for water for agricultural and domestic consumption. It also gives opportunity for the establishment of various industries in the Municipality.

The town has wide forest area rich in biodiversity. Some of these are endangered that need to be protected. Along with the protection of the environment, the LGU

Janiuay is part of the critical habitat of the CPMR and home to unique flora and fauna that should be preserved and protected. It boasts of highly diverse rainforests recognized worldwide for the presence of rare and threatened species such as rafflesia (flower) and other threatened species of fauna such as *tariktik* (hornbill), *mabitang* (Panay monitor lizard), spotted deer, colony of bats, monkeys and *baboy talunon* (Visayan warty pigs). There are species of plants and animals used by the communities for their medicinal and other uses. A well balanced ecosystem provides various ecological functions.

The Municipality is blessed with natural landscapes of high value for ecotourism. *Igbiating* falls and lagoon, *Indarak-an* flammable spring, *Barasalon* caves, *Tabay* falls, *Tab-ugon* natural climbing wall, *Agub* and *Tarugan* falls have been frequently visited by the local tourists. Likewise, several caves, waterfalls and other forest resources are left unexplored. Conservation of these natural landscapes is a major priority of the LGU and MENRO *Janiuay*.

However, threats to the forests include the following: conversion of forested areas to non-forest use, unregulated gathering of forest products and the increasing demand of the supply of forest products in the market. These unregulated resources collection may also endanger critical habitat of biodiversity identified based on various studies. This will aggravate flooding and other hazards and put downstream communities at risk of disasters.

Likewise, current efforts on forest protection and management are disorganized. It has not set a mechanism where the LGU of *Janiuay* can aptly participate along with other stakeholders in the protection, development, and management of the forest.

Indigenous communities settle in the uplands of *Janiuay* but they have not yet processed their tenurial instruments with the National Commission on Indigenous People (NCIP). They have not formulated their ancestral domain sustainable development and protection plan (ADSDPP).

DENR has issued tenurial instruments through the Forestry Sector Project (FSP), Integrated Social Forestry (ISF) and Upland Development Project (UDP). These projects cover 556.1 hectares or 9.8% of the forestland of *Janiuay.* About 160 hectares of the FSP are located in areas considered for release to A&D classification as proposed in the recent delineation of the forestland by the DENR Land Evaluation Party (LEP).

There is no clear accountability on the deteriorating conditions of the forestland with the DENR and the LGU having no onsite management plans, policies and regulations are not effectively implemented and the indigenous people not properly recognized. The larger area of the forestland, about 90%, is practically under open access situation posing threats of migration and unregulated resource exploitation.

Farming alone cannot support the livelihood of most upland farmers. Flooding in low lying areas is becoming more frequent and severe during rainy season while shortage of water for irrigation and domestic use is increasingly experienced during dry season. Fish catch from the *Suague* and *Magapa* River is becoming very minimal signifying the extent of damage to the freshwater fish habitat due to excessive use of pesticides, inorganic farming, soil erosion and siltation. All these problems can be related to the effects of climate change. Disaster risk situations in forestland and lowland, such as landslide and flooding are also increasing.

The critical forest management problems undermining the economic development of *Janiuay*, is extensive deforestation, forestland degradation and soil erosion. Migration is also considered as one of the factors in forest loss. There is already evidence of a growing scarcity of good arable land, water and forest resources due to the conversion of forests into settlements and the cultivation of the area for food crops. Deforestation and land degradation is accelerating soil erosion, downstream flooding and water shortages.

In realizing the government's National Greening Program (NGP), forest is the key resource. Notably enough, forest is recognized as a sole carbon sink under the United Nations Framework Convention on Climate Change. Forest also has great potentials in developing green technologies regarding a wide use of forest bioenergy, industrialization of forest bio-resources. To maximize this forest value as a key resource, *Janiuay* has been initially working on pursuing NGP in various fields such as bioenergy technology development, agro-forestry scheme, and trees regeneration. The MENRO *Janiuay* has been implementing forest ordinances with the view of providing the public with an improved quality of life by offering recreation forests, healing forests and mountaineering services and expanding rural green spaces. As part of the forest ordinances, it contributed to revitalizing *Janiuay*'s economic depression, by creating green jobs under forest tending projects. The municipality continues to take part in

regional activities addressing climate change and to build a bridge between and among municipalities and other agency stakeholders through cooperation projects of forest rehabilitation. Lastly, the findings also reveal that to be effective in the long-run, both programs have to consider the needs and priorities of forest dwellers, which are indeed beyond market-based incentives; a win-win discourse combining forest conservation and poverty alleviation through provision may hide vested interests of developed communities. Proving the workability of activities and their quantification for emissions credit will be critical for the launching of reducing emissions from forestation and degradation in the future climate agreement.

V. CONCLUSION AND RECOMMENDATION

Environmental protection is influenced by three interwoven factors: *environmental legislation, ethics and education*. Each of these factors plays its part in influencing national-level environmental decisions and personal-level environmental values and behaviours; Combined reforestation efforts by the government and the private sector are not enough to arrest the rapid deforestation. Previous administrations had been weak in compelling timber license holders to fulfil their obligation of reforesting concession areas. Although the national government allocates funds for reforestation, projects have been largely dependent on foreign funding; reforestation efforts also tend to endanger forest biodiversity. Studies show that native species should be used for reforestation. Fast-growing, alien tree species such as mahogany, gmelina, acacia and fire tree are ecologically harmful because they prevent native species from growing with them. The survival of endemic animals and insects dependent on native species for food and shelter are adversely affected because they are not adapted to the alien tree species; Likewise, halting deforestation is more than planting trees. For as long as commercial logging continues, conflicting economic and environmental policies such as the Mining Act of 1995 and Biofuels Law remain, widespread poverty and landlessness, and corruption in government persist, laws and projects that are meant to stop deforestation are bound to fail. Worse, we will continue to lose our forests. The future of our nation and the next generations is at stake.

In the case of *Janiuay*, the designation of the protected area has had a strong attitude on the development of the surrounding communities due to 1) maintenance or expansion of natural forest cover, 2) improvement of watershed integrity and biodiversity, 3) regulation of expansion of agricultural areas in the forestland, 4) security of tenure of rights of community participants, 5) development of brush lands and grassland areas towards increasing productivity and income of the people of *Janiuay;* The opportunity-cost of *no-management* status as it will allow the LGU and the local communities to participate in actual protection and development which can increase the value of the forest assets while benefiting from the resource; Of the approximately 65,000 people living in *Janiuay*, a quarter of them, the poorest, live in the uplands. The presence of landless people, who rapidly colonize areas when they are, opened up by new roads or logging operations, pose enormous difficulties to site and habitat conservation initiatives; and this case study demonstrates the difficulties in finding the balance between forest conservation and local economic development and provides authority to the LGU of *Janiuay* in leading the overall management of the forestlands. Along this line, all forest management strategies will be implemented with local community involvement, thus the LGU will enjoin participation of *Sangguniang Barangay* to encourage wider participation. MENRO *Janiuay*'s services to its protected forests present an opportunity for incentives-based conservation, enabling livelihood and conservation goals to be more easily reconciled.

It is recommended that the Municipal Government of *Janiuay* should stop the destructive effects of open access conditions on forestlands. In particular, its entire forestlands should be under the co-management with the DENR. Under the co-management arrangement, as provided under Joint DENR-DILG-LGU Memorandum Circular No. 2003-01, DENR allows Local Government Units (LGUs) to assume the responsibility in managing forestlands within their administrative jurisdiction. The Municipal Government should share responsibility with the DENR in managing all existing tenured forestlands such as those already covered by CBFMAs and Certificates of Stewardship Contracts. Local community residents should be involved in this very important undertaking; to help achieve the development goals of *Janiuay*, future forest and forestland development perhaps be characterized by increased financial and technology investments through: 1) empowerment of communities for sustainable forest management, livelihood enhancement, climate change adaptation and disaster preparedness; 2) improvement of watershed integrity through establishment and enforcement of Forest Management Zones, maintenance or expansion of natural forest, biodiversity conservation

and protection, biodiversity-friendly agricultural practices and development and promotion of ecotourism sites; to serve as a potent instrument for the active involvement of the local government of *Janiuay*, the upland communities and other stakeholders in sustainable forest management, the Forest Land Use Plan (FLUP) may be drafted through conducting series of modular workshops on data gathering and validation, situational analysis; vision and strategic directions setting; plan integration and writeshops. This proposed plan will set the directions for *Janiuay*'s effective management and protection of its forestlands along with its economic development it aims to pursue; the MENRO *Janiuay* may actively involve the stakeholders in pursuit of the goals and scheme, not to mention, initiative actions to be implemented like actual projects based on rehabilitation technologies in collaboration between the local government and the private sector. This is in order to take the leading role in both promoting closer cooperation through bilateral forestry cooperation arrangements and establishment of networking with other municipalities and other agency stakeholders in the country; the MENRO *Janiuay* may provide orientations and trainings as an opportunity to raise awareness of *Janiuaynons* on environmental issues, specifically forest conservation and development and contribute to implementing more projects to conserve its forests vis-à-vis economic development of the Municipality and establishing an effective cooperative mechanism; the MENRO *Janiuay* may produce its annual report on the State of the Forests as basis for a sustainability plan to underscore the increasing demand on forest products that will put more pressure and threats to the forest and forestlands in the future; there is a need for a national forest management policy, recognizing that the remaining natural forests are an important and, in part, renewable resource essential for the future welfare of both Filipino people and wildlife. This policy should make habitat management the central target, and promote reforestation using native species. To implement the policy, foresters in the Philippines, whose training is currently geared to timber extraction as an economic activity, need to be retrained in forest management for biological diversity

Likewise, the MENRO *Janiuay* may adapt the forest management strategies of Reducing Emissions from Deforestation and Degradation (REDD+), an international policy proposed by developed countries to mitigate the climate crisis supposedly through forest protection. Plantations were included in the forest definition within the REDD+ framework. Proving the workability of activities and their quantification for emissions credit will be critical for the launching of reducing emissions from forestation and degradation in the future climate agreement; with the dwindling forests, coupled with the threats of more disasters brought by climate change, it is high time for a log ban and a massive reforestation effort. However, the threats should be addressed so that the opportunities can be maximized; marginalized farmers should be given more control over the land that they inhabit (through appropriate tenurial instruments), to reduce further encroachment into forested areas. Their *kaingin* practices need to be replaced with agro-forestry and improved farming methods, which would enable them to remain longer on established clearings by slowing the loss of soil fertility; simple socio-economic incentives, and awareness and training programmes, could be used to promote these changes. Efforts should be made to rehabilitate abandoned land, for example through local community forestry plantations. At selected key sites, projects may require to integrate conservation and local land-use development. An integrated land management project is particularly urgent through replanting with native species to increase and link the isolated forest patches while offering incentives to conserve the area and develop alternative sources of income; a local reforestation and agro-forestry project may be implemented that will provide real, additional and permanent reduction of greenhouse gas emissions to envision to produce long-term lessening of greenhouse gas emissions by restoring and protecting protected forest landscape, its rich biodiversity –endemic and threatened flora and fauna. It is a three-pronged approach to helping the country by providing communities with alternative livelihood from the reforestation and agro-forestry efforts, while simultaneously contributing to mitigating climate change and protecting threatened biodiversity.

Lastly, massive tree planting could lessen the impact of global warming due to carbon dioxide emissions. Reforestation reduces carbon emissions because trees absorb carbon dioxide, which is one of the major contributing elements to the greenhouse effect that causes climate change. Along this line, the LGU of *Janiuay* may intensify its campaign to minimize air pollution by promoting the use of clean fuel and energy efficient products.

REFERENCES

Adams, W. M., Aveling, R. R., Brockington, D. D., Dickson, B. B., Elliott, J. J., Hutton, J. J., et al. (2004). Biodiversity Conservation and the Eradication of Poverty. *Science, 306*(5699), 1146.

Brockington, D., & Scholfield, K. (2010). Expenditure by conservation nongovernmental organizations in sub-Saharan Africa. *Conservation Letters*.

Bruner, A. G., Gullison, R. E., & Balmford, A. (2004). Financial Costs and Shortfalls of Managing and Expanding Protected-Area Systems in Developing Countries. *BioScience,54*(12), 1119-1126.

Castro, G., & Locker, I. (2000). *Mapping Conservation Investments: An Assessment of Biodiversity Funding in Latin America and the Caribbean*. Washington, DC: Biodiveristy Support Program.

Corbin, J. & Strauss, A. 1990. Basics of Qualitative Research: Grounded Theory Procedures and Techniques. Newbury Park, CA: Sage Publications.

Halpern, B. S., Pyke, C. R., Fox, H. E., Haney, J. C., Schlaepfer, M., A., & Zaradic, P. (2006).

Gaps and Mismatches between global conservation priorities and spending. *Conservation Biology, 20*(No. 1), 56-64.

Hicks, R., Parks, B., Roberts, J. T., & Tierney, M. (2008). *Greening Aid? Understanding Environmental Assistance to Developing Countries*. Oxford: Oxford University Press.

Hicks, R. L., Parks, B. C., Roberts, J. T., & Tierney, M. J. (2008). *Greening Aid? Understanding Environmental Assistance to Developing Countries*. Oxford: Oxford University Press.

Improving Forest Governance and Sustainable Upland Development through Climate Change Mitigation Financing Strategies in Southern Palawan (2011), REDD_Palawan_consultation.pdf

Mansourian, S., & Dudley, N. (2008). *Public funds to protected areas*. Gland: WWF International.

Miller, D. C., Agrawal, A., & Roberts, J. T. (ND). *Aiding Biodiversity? Official Development Assistance for Conservation, 1980-2008*.Unpublished manuscript.

Municipality of *Janiuay* Forest Land Use Plan 2012 Pejchar, L.; Caldwell, M; Palmer, C.; Daily, G. (2007). *Evaluating the Potential for Conservation Development: Biophysical, Economic, and Institutional Perspectives*. Conservation Biology 21 (1): 69-78

Philippine Forests (2011), www.birdlife.org/action/science/species/asia_strategy/pdf

Protect Philippine Forests (2011), opinion/inquirer.net

Reference materials from *Janiuay* MENRO and MPDO

Roberts, J. T., Parks, B. C., Tierney, M. J., & Hicks, R. L. (2009). *Has Foreign Aid Been Greened? Environment, 51*(1), 8-19.

Sanderson, S. E., & Redford, K. H. (2003). *Contested relationships between biodiversity conservation and poverty alleviation*. *Oryx, 37*(04), 389-390.

Seidel, J.V. 1998. *Qaulitative data analysis*. Available at ftp://ftp.qualisresearch.com/pub/qda.pdf. 15.07.2010

The Threatened State of Philippine Forests, 2012, http://www.cecphils.org/content/threatened-state-philippine-forests