

REGIONAL ACTION PLAN FOR IMPLEMENTING THE PHILIPPINE MASTER PLAN FOR CLIMATE RESILIENT FORESTRY DEVELOPMENT

Region 4B, MIMAROPA Region

I. Background and Rationale

In CY 2013, the Forest Management Bureau (FMB) decided to update the 2003 revised master plan for forestry development (RMPFD), to take into consideration the potential impacts of climate change to the forestry sector. The revision was also in consonance with the Climate Change Act of 2009 requiring that all government programs and policies should consider the impacts of climate change. Hence, a Philippine master plan for climate resilient forestry development (PMPCRFD) was formulated where three strategic programs were identified for implementation to ensure that the forestry sector can respond to the adverse impacts of climate change and address varying demands for forest ecosystems goods and services from multiple clients. The three major programs include the following:

1. Program on strengthening resilience of forest ecosystems and communities to climate change;
2. Program responding to demands for forest ecosystem goods and services; and
3. Program promoting responsive governance in the forestry sector.

This plan outlines DENR Region 4B's action plan to support implementation of the PMPCRFD for CY 2016-2028.

II. Regional Profile

MIMAROPA, also known as Region IV-B, is located in Luzon. The region was created on May 17, 2002, after Region IV (Southern Tagalog) was further sub-divided. The name is an acronym that stands for the provinces, comprising the region, namely: Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan. There are only two cities in the entire region: Calapan City and Puerto Princesa City. MIMAROPA is one of five regions in the country having no land border with another region (Figure 1).

Figure 1. Location of the MIMAROPA Region



2.1 Physical features

MIMAROPA is composed of four major islands (Mindoro, Marinduque, Romblon and Palawan). It has varied land forms, consisting of flat coastal and agricultural areas upland interior areas of slightly moderate rolling or undulating plains and hills, and steep mountains. Most of the region's land area has a slope of more than 18%. Various mountain peaks mark

the islands of region 4B. The highest peak within the region and the 18th highest mountain in the Philippines is Mt. Halcon, with an elevation of 2,586 meters above sea level. Mt. Halcon serves as the natural boundary between Occidental and Oriental Mindoro. The other mountain peaks in MIMAROPA include the following: Mt. Mantalingahan in Palawan (2,086 meters); Mt. Baco in Occidental Mindoro (2,488 meters); Mt. Malindig in Marinduque (1,157 meters) and Mt. Guiting-Guiting in Romblon (2,058 meters).

Region 4B is covered by type I and type III climate based on the modified coronas classification. The eastern section is predominantly of type III climate where there is no pronounced dry and wet season but is relatively dry from November to April and wet the rest of the year. The western section of the region belongs to type I climate with pronounced wet and dry season, generally dry from November to April and wet the rest of the year. The observed temperature ranges from 26.3°

2.2 Socio-Economic Profile

MIMAROPA Region has a population of 2,963,360 inhabitants based on the 2015 national census. Its average annual population growth rate from 2000 to 2015 is about 1.68%. Palawan is the most populated province and has the highest annual population growth rate in the region (Table 1). Indigenous peoples are mostly found in the upland areas of the region, which include the Mangyans in Mindoro and the Tagbanuas in Palawan.

Table 1. Population and Annual Population Growth Rates of MIMAROPA Region

| Provinces | Population | | | Annual Pop. Growth Rate | | |
|--|------------------|------------------|------------------|-------------------------|-------------|-------------|
| | May 2000 | May 2010 | Aug. 2015 | 2000-2010 | 2010-2015 | 2000-2015 |
| REGION IV-B (MIMAROPA) | 2,299,229 | 2,744,671 | 2,963,360 | 1.79 | 1.47 | 1.68 |
| MARINDUQUE | 217,392 | 227,828 | 234,521 | 0.47 | 0.55 | 0.50 |
| OCCIDENTAL MINDORO | 380,250 | 452,971 | 487,414 | 1.76 | 1.40 | 1.64 |
| ORIENTAL MINDORO | 681,818 | 785,602 | 844,059 | 1.43 | 1.38 | 1.41 |
| PALAWAN (excluding PUERTO PRINCESA CITY) | 593,500 | 771,667 | 849,469 | 2.66 | 1.84 | 2.38 |
| PUERTO PRINCESA CITY | 161,912 | 222,673 | 255,116 | 3.24 | 2.62 | 3.02 |
| ROMBLON | 264,357 | 283,930 | 292,781 | 0.72 | 0.59 | 0.67 |

Source: PSA, CY 2000, 2010, 2015

The region's economy relies mostly on agriculture, fishing and ecotourism. About half of the region's total employment was in the agriculture sector. Palay accounted for more than one-fourth of the region's agricultural output. MIMAROPA placed seventh in the national production of palay. It ranked first in terms of calamansi production and second in terms of fish and seaweed production (countrystat.psa.gov.ph).

2.3 Resources

MIMAROPA has varied resources that include land, forests and biodiversity resources, water, mineral and ecotourism areas, among others.

Land Resources

Region 4B has a total land area of 2,745,601 hectares. Of this, 64 % or 1,747,038 hectares are classified as forestlands while 36% or 998,563 hectares are alienable and disposable lands (table 2). Most of the forestlands are situated in the province of Palawan, representing roughly 70% of the total area of the province.

Table 2. Land Classification in Region 4B

| Land Classification | Area (ha) | % |
|--|-----------|------|
| Forestlands | 1,747,038 | 64% |
| Classified Forestlands | 1,691,899 | 62% |
| Established Timberlands | 369,269 | 14% |
| Forest Reserves, National Park/ Prot. Areas & Other Reservations | 1,322,630 | 48% |
| Unclassified forestlands | 55,139 | 2% |
| Alienable and disposable lands | 998,563 | 36% |
| Total | 2,745,601 | 100% |

Source: Philippine Forestry Statistics, CY 2014

Forests Resources

About 33% (915,664 hectares) of the region's land area are still forested consisting of open forest (744,530 hectares), closed forest (97,810 hectares), and mangrove forests (73,324 hectares). Most of the forests are located in the province of Palawan covering 692,288 hectares or 76% of the total forested area of the region. Marinduque has the least forest covering only an estimated area of 15,132 hectares. Table 3 summarizes the 2010 land cover per province in region 4B.

Table 3. Land Cover of Region 4B, CY 2010

| Province | Land Area | Total Forest | Close Forest | Open Forest | Mangrove Forest | % of region's Forest | % of Prov. Forested | % of total Forest Close forest |
|--------------------|-----------|--------------|--------------|-------------|-----------------|----------------------|---------------------|--------------------------------|
| Region 4B | 2,745,601 | 915,664 | 97,810 | 744,530 | 73,324 | 100.0% | 33.4% | 11% |
| Marinduque | 95,925 | 15,132 | 0 | 12,255 | 2,877 | 1.7% | 15.8% | 0% |
| Occidental Mindoro | 587,985 | 104,986 | 1,968 | 101,424 | 1,594 | 11.5% | 17.9% | 2% |
| Oriental Mindoro | 436,472 | 86,981 | 5,301 | 77,731 | 3,949 | 9.5% | 19.9% | 6% |
| Palawan | 1,489,626 | 692,288 | 86,877 | 541,590 | 63,821 | 75.6% | 46.5% | 13% |
| Romblon | 135,593 | 16,277 | 3,664 | 11,529 | 1,084 | 1.8% | 12.0% | 23% |
| % of Region | | 33.4% | 3.6% | 27.1% | 2.7% | | | |

Source: Phil. Forestry Statistics, CY 2014

The forest cover of region 4B has decreased considerably by about 279,480 hectares from CY 2003 to CY 2010. This means that about 39,925 hectares of forests were being destroyed annually during this period. In general, there was a decrease in forest cover in all provinces except in Marinduque and Romblon which registered a small increase in forest cover of 2,008 hectares and 7,987 hectares, respectively. Among the areas of region 4B, Mindoro and Palawan islands are critical because of the large tracks of forest loss in these

areas. These islands lost most of its close forests leading to destruction or degradation of critical habitats of flora and fauna. Mindoro island is most crucial because it lost large areas of both its close and open forests, indicating that both types of forests are highly threatened. The forest cover change in region 4B is summarized in table 4.

Table 4. Forest Cover Change in Region 4B (CY 2003-CY 2010)

| Provinces | Close Forest | | | Open Forest | | | Mangrove Forest | | | Net Change |
|--------------------|--------------|---------|-----------|-------------|---------|-----------|-----------------|--------|--------|------------|
| | 2010 | 2003 | Change | 2010 | 2003 | Change | 2010 | 2003 | Change | |
| Marinduque | 0 | 0 | - | 12,255 | 10959 | 1,296 | 2,877 | 2165 | 712 | 2,008 |
| Occidental Mindoro | 1,968 | 56024 | (54,056) | 101,424 | 170038 | (68,614) | 1,594 | 289 | 1,305 | (121,365) |
| Oriental Mindoro | 5,301 | 21080 | (15,779) | 77,731 | 202066 | (124,335) | 3,949 | 57 | 3,892 | (136,222) |
| Palawan | 86,877 | 406349 | (319,472) | 541,590 | 263684 | 277,906 | 63,821 | 54143 | 9,678 | (31,888) |
| Romblon | 3,664 | 1413 | 2,251 | 11,529 | 5499 | 6,030 | 1,084 | 1378 | -294 | 7,987 |
| Total* | 97,810 | 484,866 | (387,056) | 744,529 | 652,246 | 92,283 | 73,325 | 58,032 | 15,293 | (279,480) |

* Include plantations

Source: Philippine Forestry Statistics, CY 2004 and CY 2014.

Water resources

Region 4B is drained by many river systems that are used for irrigation and domestic purposes. It has 6 watershed forest reserves covering approximately 8,748 hectares. Many of its water bodies are used not only for irrigation but also for fishing to support livelihood of communities. Table 5 lists the watershed forest reserves in the region, their estimated area and the proclamation number which established these reserves.

Table 5. List of Watershed Forest Reserves in Region 4B

| Name of Reserve | Location | Area (ha) | Proc . No. |
|---|---|-----------|------------|
| Bacuit Watershed Forest Reserve | Bacuit, Palawan | 94 | 785 |
| Palawan Flora, Fauna Watershed Forest Reserve | Puerto Princesa, Palawan | 4776 | 2221 |
| Torrijos Watershed Forest Reserve | Torrijos, Marinduque | 105 | 463 |
| Naampias River Watershed Forest Reserve | Torrijos, Marinduque | 417 | 357 |
| Calatrava-San Andres-San Agustin Watershed Forest Reserve | Calatrava, San Andres, & San Agustin, Romblon | 2670 | 2186 |
| Ipil River Watershed Forest Reserve | San Fernando, Romblon | 686 | 394 |
| Total Area (ha) | | 8748 | |

Source: Philippine Forestry Statistics, 2014

Biodiversity Resources

The Region has rich biodiversity resources, both terrestrial and marine. Sibuyan island for instance is commonly known as the "Galapagos of Asia" because of its many endemic plant and animal species, some of which have just been discovered recently. Among these endemic species are nine mammals, seven lizards, two amphibians, three birds and 112 vascular plants, such as the *Nepenthes argentei*, *Nepenthes sibuyanensis*, *Nepenthes armin*, Sibuyan striped shrew rat, Sibuyan shrew, Philippine tube-nosed fruit bat, indigo-banded kingfisher, and the Romblon hawk-owl. In Tablas Island, at least two endemic bird species can be found: the Tablas drongo and Tablas fantail. (<https://en.wikipedia.org/wiki/Romblon>). Among the many endemic species in Palawan are the Palawan peacock-pheasant, Philippine mouse-deer, Philippine pangolin, Palawan bearded pig, and Palawan birdwing. Over 600 species of butterflies flutter around the

mountains and fields of Palawan, attracted to some 1500 hosts plants. Endangered sea turtles nest on white sand beaches while more Dugong population still exist in Palawan than in any other part of the Philippines (<https://en.wikipedia.org/wiki/Palawan>). The Mindoro island is also known for the tamaraw which is found nowhere else in the world.

MIMAROPA has 10 protected areas, 7 of which are located in Palawan, 2 in Mindoro Occidental and one in Romblon. Many of these protected areas also serve as ecotourism destinations especially for foreign tourists. The list of protected areas in the MIMAROPA region with their corresponding area, and location is presented in table 6.

Table 6. List of Protected Areas in Region 4B

| Name | Location | Area | Year Estab. | Type of Prot. Area |
|---|--------------|---------------|-------------|----------------------------|
| Apo Reef | Mindoro Occ. | 15,792 ha | 1996 | National park |
| Mount Guiting-Guiting | Romblon | 15,265.48 ha | 1996 | National park |
| Tubbataha Reef | Palawan | 97,030 ha | 2010 | National park |
| Mount Mantalingajan | Palawan | 120,457 ha | 2009 | Protected landscape |
| Malampaya | Palawan | 200,115 ha | 2000 | Prot. Landscape & seascape |
| Calauit Safari Park | Palawan | 3,400 ha | 1976 | Game ref & bird sanc. |
| Calavite and FB Harrison | Mindoro Occ. | 121,983.81 ha | 1920 | Game ref & bird sanc. |
| Palawan | Palawan | 761,416 ha | 1967 | Game ref & bird sanc. |
| El Nido Managed Resource Protected Area | Palawan | 89,134.76 ha | 1998 | Managed res.PA |
| Rasa Island | Palawan | 1,983 ha | 2006 | Wildlife sanctuary |

Source: http://readtiger.com/wkp/en/List_of_protected_areas_of_the_Philippines

Ecotourism Areas

MIMAROPA is one of the busiest regions in terms of tourism. It is home to Palawan's pristine tropical forests and beaches as well as Puerto Galera's beautiful sunsets and vibrant party scene.. Divers from all over the world seek the marine wonders of Occidental Mindoro's Apo Reef while mountain climbers are visiting the challenging terrains of Mt. Guiting- Guiting in Romblon. Tourists also flock to Marinduque, the country's Lenten capital, where the famous Moriones festival is held every year (www.nnc.gov.ph). Other famous natural attractions in MIMAROPA are the El Nido Marine Reserve, Underground River, Coron in Palawan, Naujan Lake and Mt. Halcon in Oriental Mindoro, the Tres Reyes Islands in Marinduque and the Tamaraw Conservation Pool in Occidental Mindoro. These sites are frequently visited by foreign and local travelers.

Mineral Resources

The MIMAROPA region is rich in mineral resources, both metallic and non metallic. Among the metallic minerals present in the region are the following: nickeliferous laterite, copper, gold, silver,chromite (metallurgical and refractory grades), iron, manganese, mercury, molybdenum, lead and zinc.

2.4 Vulnerability to Climate Change Hazards.

Climate projections by PAGASA (2011) indicate that there will be increasing temperature in 2050. In terms of rainfall, rainy season will have more rainfall while dry season will become drier. For region 4B, the estimated increase in temperature will range from 1.7°C to 2.2°C, with higher temperature increase during the months of March to May. Meanwhile, decrease in rainfall is estimated to range from -2.4% to -23.8%. The biggest reduction in rainfall is expected from March to May, while up to 66.2% increase in rainfall is expected during the rainy months of June, July and August in the province of Romblon. (table 7 and 8). Note that Romblon is projected to have increased rainfall even during the dry season in contrast to the other provinces of region 4B.

Table 7. Seasonal temperature increases (°C) in 2050 under medium-range emission scenario, Reg. 4B

| Provinces | Observed Baseline (1971-2000) | | | | Change in 2050 (2036-2065) | | | |
|--------------------|-------------------------------|------|------|------|----------------------------|-----|-----|-----|
| | DJF | MAM | JJA | SON | DJF | MAM | JJA | SON |
| Occidental Mindoro | 26.5 | 28.3 | 27.3 | 27.1 | 1.9 | 2.1 | 1.8 | 1.9 |
| Oriental Mindoro | 26.4 | 28.3 | 27.6 | 27.3 | 1.8 | 2.0 | 2.2 | 1.9 |
| Romblon | 26.3 | 28.5 | 28.1 | 27.7 | 1.8 | 2.2 | 1.9 | 1.7 |
| Palawan | 26.9 | 28.1 | 27.3 | 27.4 | 1.8 | 2.1 | 2.0 | 1.8 |

Source: PAGASA, 2011

Table 8. Seasonal rainfall change (in %) in 2050 under medium-range emission scenario in Region 4B

| Provinces | Observed Baseline (1971-2000) | | | | Change in 2050 (2036-2065) | | | |
|--------------------|-------------------------------|-------|--------|-------|----------------------------|-------|------|------|
| | DJF | MAM | JJA | SON | DJF | MAM | JJA | SON |
| Occidental Mindoro | 159.5 | 265.9 | 1091.2 | 762.6 | 15.8 | -23.8 | 26.7 | -2.4 |
| Oriental Mindoro | 260.3 | 269.3 | 894.3 | 791.2 | 21.6 | -11.5 | 5.3 | 2.9 |
| Romblon | 357 | 224 | 652.9 | 778 | 32.6 | 26.3 | 66.2 | 37.9 |
| Palawan | 101.8 | 189.3 | 781.7 | 640.6 | 7.3 | -9 | 1 | 6.9 |

Source: PAGASA (2011)

With more rains during the rainy season, floods, soil erosion and landslide may be aggravated endangering lives and properties of communities. On the other hand, with less rains during the dry season, water availability for irrigation and domestic use will be adversely affected. The region is already categorized as a water stressed region and this condition is expected to worsen with climate change. Other hazards to which the region is vulnerable is summarized in table 9.

Table 9. Provincial Vulnerability to Climate Related Hazards & Poverty Incidence in ReG. 4B

| Region/ Province | Vulnerability | | | | | 2012 Poverty Index Poverty Incidence among families (%) |
|---------------------|---------------|------------|----------|--------------|------------------------------|--|
| | Typhoons | Earthquake | Tsunamis | Water stress | Combined Climate Risks | |
| Region 4-B | | | | | | 28.4 |
| Marinduque | Medium | Low | Low | High | High | 29.4 |
| Occ. Mindoro | Medium | Medium | Medium | High | Medium | 38.0 |

| Region/ Province | Vulnerability | | | | | 2012 Poverty Index Poverty Incidence among families (%) |
|---------------------|---------------|------------|----------|-----------------|------------------------------|--|
| | Typhoons | Earthquake | Tsunamis | Water stress | Combined Climate Risks | |
| Oriental Mindoro | Medium | Low | Medium | High | Medium | 26.2 |
| Palawan | Very low | Low | Low | High | Very Low | 25.2 |
| Romblon | Medium | Low | Medium | High | High | 29.8 |

Source: NSCB website: <http://www.nscb.gov.ph>

III. Development Challenges in the Forestry Sector of Region 4B

The challenges faced by the forestry sector in region 4B is summarized in the succeeding discussions

1. Protection of existing forests is a major concern in the region. Its forests cover has decreased from 1,195,144 hectares in 2003 to only 915,664 hectares in 2010 equivalent to an annual decrease in forest cover of close to 40,000 hectares. This situation has significantly diminished the ability of forests to provide ecosystem services and as a result, could hardly meet local demands for wood, and other non wood forest products. The critical provinces in MIMAROPA in terms of forest destruction are Occidental and Oriental Mindoro because large scale forest destruction is happening both at the open and close forests. Palawan is also a hotspot since most of its close forest (319,472 hectares) had been converted to open forests and other lower quality vegetation.
2. The ability of the region to continuously supply irrigation and domestic water may be compromised due to forest destruction and conversion and encroachment into its major watersheds. With agriculture, fishery, and forestry as major sources of income for most of the population in the region, the livelihood of these communities, particularly the farming and fishing sectors will be adversely affected. Some of the rice fields in Occidental Mindoro for instance have inadequate irrigation during the dry season because most of the river systems in the province no longer have the demanded volume of water to provide adequate irrigation. This is attributed to the greatly deforested watersheds. As such, there is a need to expedite rehabilitation of degraded watersheds and protect the remaining forests to ensure adequate water supply especially during the dry season.
3. Loss of Biodiversity is a critical problem that is going on unnoticed. A closer examination of the forest cover loss data in region 4B would show that large areas of close forests (387,056 hectares) had been destroyed in a span of 7 years from 2003 to 2010. Since close forests are known to contain rich biodiversity resources, large scale destruction of this type of forest imply loss of habitat of important biodiversity species. This problem is most prominent in Occidental Mindoro which lost 96% of its close forest between 2003 and 2010; in Palawan which lost 79% and in Oriental Mindoro where 75% of its close forest were gone.
4. Reducing the impacts of climate change hazards should be given priority attention. Region 4B is vulnerable to climate and geological related hazards such as typhoons, floods, landslides, storm surge, and earthquakes. The increased frequency and intensity of these hazards, aggravated by changes in climatic conditions, will continue to endanger the lives and properties of communities. Most LGUs and majority of the population are not prepared for hazards and communities are not organized for disaster risk reduction.

6. Collaborative management is necessary to address the overlapping mandates of different agencies in the management of forests and forestlands. However, to be effective, the capabilities of members of the collaborative management bodies must be upgraded. Most LGUs for instance, lack technical capability and financial resources to manage and implement devolved forestry programs. They also lack the capability to enforce forestry laws and regulations and mobilize communities in forest protection activities. Most of them do not have approved forest land use plans which can complement their comprehensive land use plans and local development plans.

IV. Regional Comparative Advantages and Competitive Goods and Services: Opportunities for Forestry Development

While lots of challenges exist in the forestry sector, the region has inherent comparative advantages and competitive goods and services which can be strengthened to maximize the forestry sector's contribution to regional development. The comparative advantages of region 4B include the following:

1. It has vast areas of agricultural lands in Mindoro, Marinduque and Palawan suited for the production of rice and other crops;
2. Less exposure of Palawan and Oriental Mindoro to typhoon;
3. Presence of watershed reservations that provide water for dams and other reservoirs for irrigation and for domestic use;
4. Extensive areas of closed and open forests, waterfalls, lakes, rivers, biodiversity resources, and beaches that are potential for ecotourism;
5. Existing pasture areas in Mindoro that can be developed further for grazing purposes to satisfy local demand for meat;
6. Existing plantations of cashew, calamansi, mango and rambutan showing typical agroforestry farms;
7. Close proximity of Mindoro to Metro Manila
8. Established markets for various products such as fruits, agricultural crops, fuelwood and other non-timber products; and
9. Potential areas for REDD+;

The following are the region's competitive goods and services which can be supported through its regional action plan for PMPCRFD implementation, to maximize the forestry sector's contribution to regional and national development.

1. Ecotourism in all provinces
2. Agroforestry products such as rambutan and calamansi in Oriental Mindoro and , cashew and mango in Palawan
3. Water production for Irrigation and domestic use and to support agricultural crop production such as rice, corn and vegetables in Mindoro and Palawan
4. Cattle raising in Mindoro
5. Fisheries products in all provinces
6. Non timber products, such as honey, rattan, vines in Palawan and Mindoro and
7. REDD+

The matrix of comparative advantages and competitive goods and services of region 4B as identified by DENR region 4B is attached as annex 1.

V. Regional Action Plan for Implementing the Philippine Master Plan for Climate Resilient Forestry Development

The regional action plan for implementing the PMPCRFD addresses the forestry challenges and maximizes the opportunities provided by the comparative advantages and competitive goods and services of the region. It focuses on ensuring the health and resiliency of forest ecosystems and communities to climate change hazards so that forest resources can sustainably provide and meet the increasing demands for forest ecosystems goods and services. Equally important is the institutionalization of climate responsive governance where various stakeholders collaborate and participate in making decisions in the management of forest resources and ecosystems.

5.1 The Forestry Sector Vision

The region adopts the vision of the Philippine master plan for climate resilient forestry development as follows:

Climate resilient and sustainably managed watersheds and forest ecosystems, providing environmental and economic benefits to society

To achieve the vision and address the challenges in the forestry sector, the region has adopted the following goals of the PMPCRFD:

1. To place all forestlands under sustainable management in order to meet demands for forest goods and services and to promote resilience to climate change;
2. To strengthen resilience of forest dependent communities to climate change hazard;
3. To place all forestlands of the region under appropriate land management arrangements; and
4. To sustainably manage watersheds in partnership with stakeholders.

5.2 Strategic Programs

Considering the identified issues and the region's comparative advantages and competitive goods and services, the forestry programs in region 4B will focus on the following:

1. Protection of existing forests and biodiversity resources to support ecotourism, fisheries, hazard mitigation and watershed management for irrigation and domestic water supply;
2. Grazing land management to take advantage of the region's existing pasture areas;
3. Forest Plantation development to address local demand for lumber and fuelwood;
4. Rehabilitation of watersheds and other protection forests;

5. Agroforestry farm development to diversify livelihood & support fruit production in Mindoro and Palawan;
6. Protection of existing mangroves and rehabilitation of degraded mangrove areas to enhance fisheries, ecotourism and hazard mitigation;
7. Institutionalizing collaborative management and
8. REDD + implementation

a. Program to Strengthen Resilience of Forest Ecosystems and Communities to Climate Change Hazards

Effective climate change mitigation and adaptation strategies will be integrated into the regional forestry action plan to meet the multiple objectives of preventing further forest degradation, reducing disaster risks, maximizing productivity, and reducing vulnerability to climate hazards.

Objectives

1. To align land uses within watersheds and forest ecosystems by facilitating the formulation of forest land use plans of 64 LGUs and integrating them into their comprehensive land use plans;
2. To undertake vulnerability assessment and adaptation planning in one priority watershed in Occ. Mindoro;
3. To protect 918,885 hectares of existing forests and plantations starting in 2016 gradually increasing to 978,390 hectares in 2028;
4. To diversify livelihood of local communities by developing 6,000 hectares of agroforestry farms;
5. To rehabilitate 8,628 hectares of protection forests through assisted natural regeneration;
6. Rehabilitate 13,738 hectares of degraded mangroves areas; and
7. Implement REDD+ in Palawan

Strategic Activities, Targets and Period of Implementation

The activities that will be implemented to strengthen resilience of forest ecosystems and communities to climate change hazards, and their implementation period and targets are summarized in table 10.

Table 10. Summary of Activities and Period of Implementation to Strengthen Resilience of Communities and Ecosystems to Climate Change Hazards

| Strategic Programs and Activities | Targets and Implementation Period | | | |
|--|-----------------------------------|------------|------------|---------|
| | 2016 | 2017 -2022 | 2023 -2028 | Total |
| 1. Vulnerability assessment and adaptation planning in priority watersheds (no.) | 1 | 0 | 0 | 1 |
| 2. FLUP formulation (no. of LGUs) | 11 | 53 | 0 | 64 |
| 3. Protection of existing forests and plantations including mangroves (ha) | 918,885 | 948,359 | 978,390 | 978,390 |

| Strategic Programs and Activities | Targets and Implementation Period | | | |
|---|-----------------------------------|------------|------------|--------|
| | 2016 | 2017 -2022 | 2023 -2028 | Total |
| 4. Establishment of vegetative soil and water conservation measures (cubic meters) | 0 | 115 | 0 | 115 |
| 5. Agroforestry development (mixed crops in ha) | 1000 | 5,000 | 0 | 6,000 |
| 6. Rehabilitation of protection forests (ANR) | 8,628 | 0 | 0 | 8,628 |
| 7. Rehabilitation of degraded mangrove areas (ha) | 9,206 | 3,715 | 817 | 13,738 |
| 8. REDD+ implementation (no of provinces) | 0 | 1 | 0 | 1 |
| 9. Training on vulnerability assessment, adaptation planning, integrated pest management, IWM, FLUP (no. of training) | 0 | 4 | 4 | 8 |

b. Program to Address Increasing Demands for Forest Goods and Services

Considering the regional comparative advantages, and its competitive goods and services, the regional action plan of region 4B will give more focus on addressing demands for round wood, fuelwood, grazing, water, biodiversity conservation to support ecotourism and fisheries and the need to reduce disaster risks.

Objectives

The specific objectives of this program are:

1. To develop 25,000 hectares of commercial plantations for timber production;
2. To develop and maintain 10,000 hectares of fuelwood plantations;
3. To protect and conserve existing watersheds and rehabilitate 2,239 hectares in priority watersheds for domestic and industrial use and for irrigation to support production of rice and other agricultural crops;
4. To develop 10,457 hectares of pasture areas to address local demands for meat; and
5. To develop forest parks, and green belts in key cities of the region

Strategic Activities, Targets and Period of Implementation

The activities, targets and their period of implementation to address demands for forest goods and services are summarized in table 11.

Table 11. Summary of Activities, Targets and Period of Implementation to Address Demands for Forest Goods and Services

| Strategic Activities | Targets and Implementation Period | | | |
|---|-----------------------------------|------------|------------|-----------|
| | 2016 | 2017 -2022 | 2023 -2028 | Total |
| 1. Demarcation of forestland boundaries & forest management zones (ha.) | 0 | 1,747,038 | 0 | 1,747,038 |
| 2. Development of seed production areas in all provinces (no. of sites) | 0 | 5 | 0 | 5 |
| 3. Establishment of mechanized nurseries (no.) | 1 | 0 | 0 | 1 |
| 4. Commercial forest plantation development for round wood production in Palawan & Mindoro (ha) | 0 | 0 | 25,000 | 25,000 |
| 5. Fuelwood/ bio energy plantation dev't (ha) | 0 | 2,400 | 7,600 | 10,000 |
| 6. Management of grazing lands in Mindoro & Palawan (ha) | 8,775 | 8,775 | 10,457 | 10,457 |

| Strategic Activities | Targets and Implementation Period | | | |
|---|-----------------------------------|------------|------------|-------|
| | 2016 | 2017 -2022 | 2023 -2028 | Total |
| 7. Watershed rehabilitation (ha) | 500 | 1,739 | 0 | 2,239 |
| Organization and capacitation of watershed management bodies , such as the watershed management council (no.) | 1 | 9 | 0 | 10 |
| 8. Support to biodiversity conservation to enhance ecotourism and fisheries (No of PAs) | 0 | 10 | 10 | 10 |
| 9. Support to urban forestry in major cities and urban centers (LGUs assisted) | 0 | 2 | 2 | 4 |

c. Institutionalizing Responsive Governance in Forestry

The governance of forestlands and protected areas in the region has been complicated, by overlapping institutional mandates and overlapping tenure at the forest management unit level. With different policy issuances, such as the local government code, indigenous peoples rights act, national integrated protected area system act and the water code, among others, DENR no longer has exclusive jurisdiction over forest ecosystems. This overlapping mandates have resulted to overlapping tenure instruments at the forest management unit level. In many instances, CADTs, protected areas, watershed reserves, and CBFMAs overlap with each other, leading to confusion on who is accountable for the management of the allocated forestlands and protected areas.

Apart from overlapping mandates and overlapping tenure, the different demands for forest ecosystems goods and services from multiple clients, which often times are conflicting, requires collaborative management of forests and forestlands. In view of this institutional reality, the forestry sector in the region will enhance the skills and capabilities of its personnel so that it can effectively collaborate with other stakeholders in implementing programs on strengthening resilience to climate change hazards and respond to demands for forest ecosystems goods and services.

Objectives

The primary objectives of this program are the following:

1. To establish clear accountability in the management of forestlands;
2. To promote active participation of stakeholders in the management of forests and forestlands;
3. Keep track of progress in the implementation of the regional action plan for implementing the PMPCRFD; and
4. Strengthen the capabilities of DENR and other stakeholders in implementing forest management programs related to enhancing resilience to climate change and responding to demands for forest goods and services from multiple clients.

Strategic Activities and Targets

The activities, targets and their implementation periods to institutionalize responsive governance in the forestry sector in region 4B are summarized in table 12.

Table 12. Summary of Activities, Targets and Period of Implementation to Institutionalize Responsive Governance in Region 4B

| Strategic Programs and Activities | Targets per Implementation Period | | | |
|--|-----------------------------------|------------|------------|---------|
| | 2016 | 2017 -2022 | 2023 -2028 | Total |
| Promoting Responsive Governance | | | | |
| 1. Tenure issuance in open access forestlands (ha) | 0 | 200,000 | 200,000 | 400,000 |
| 2. Organization and capacitation of multi-sectoral collaborative management bodies (region and province) | 0 | 6 | 6 | 6 |
| 3. Creation and operationalization of regional/provincial TWG on climate change (no.) | 0 | 6 | 6 | 6 |
| 4. Capability enhancement for DENR/ LGUs (no. of trainings) | 1 | 12 | 12 | 25 |
| 5. Semi-annual / annual monitoring and evaluation of PMPCRFD implementation (No.) | 0 | 12 | 12 | 24 |
| 6. Performance assessment of tenure holders (No.) | 0 | 6 | 6 | 12 |

d. Support programs

Cross cutting support programs will focus on facilitating implementation of the three major forestry programs in the region. These are designed to inform the public of the important role of forest ecosystems in mitigating the adverse impacts of climate change and in securing water supply and other forest ecosystems goods and services. These are also intended to develop sustainable financing mechanisms, promote science based decision making and improve accountability through forest certification and improved data base.

Objectives

The support programs aim to:

1. Generate stakeholders' support in the implementation of the Philippine master plan for climate resilient forestry development;
2. Develop a data base management system to establish appropriate baseline data as basis for management decisions and monitoring and evaluation
3. Identify sustainable sources of financing for implementing the forestry master plan
4. Institutionalize a system for certifying sustainably managed forests and industries
5. Provide research based information for forest management decision making, vulnerability assessment and climate change adaptation planning

Strategic Activities, Targets and Period of Implementation

The strategic activities, targets and period of implementation to achieve the objectives of this program are summarized in table 13.

Table 13. Summary of Support Program Activities, Targets and Implementation Period

| Strategic Activities | Targets per Implementation Period | | | |
|--|-----------------------------------|------------|------------|-------|
| | 2016 | 2017 -2022 | 2023 -2028 | Total |
| 1. Information, education and communication campaign (no. of LGUs) | 10 | 35 | 35 | 80 |
| 2. Upgrading of regional MIS facilities (no.) | 0 | 6 | 6 | 12 |

| Strategic Activities | Targets per Implementation Period | | | |
|---|-----------------------------------|------------|------------|-------|
| | 2016 | 2017 -2022 | 2023 -2028 | Total |
| 3. Implementation of forest certification (Provinces) | 0 | 5 | 5 | 5 |
| 4. Identification and assessment of sustainable sources of financing in forestry projects (No. of sites assessed) | 0 | 5 | 5 | 10 |
| 5. forestry research (no. of studies) | 0 | 6 | 6 | 12 |

V. Plan Implementation

This regional action plan shall be implemented by DENR region 4B in collaboration with LGUs, NCIP, CBFMA/ CADT holders, private investors, and other relevant stakeholders. Orientation/ information campaign about the regional action will be undertaken for LGUs and key stakeholders to encourage them to participate in its implementation.

Financing of the regional action plan for implementing the PMPCRFD will come both from the government and the private sector. Government financing will primarily come from existing programs/ projects of the DENR and to some extent from existing programs of the LGUs, especially those related to disaster risk reduction, climate change adaptation and the formulation/ updating of the comprehensive land use plans which integrates the FLUP, protection area management plans, ADSDPP and the watershed management plans as mandated under existing guidelines. Fund sourcing will be undertaken for activities and programs which are not included in existing programs and projects of DENR, LGUs and other agencies. Where there are opportunities for donor assistance, unfunded programs and projects will be submitted for possible financial support.

References

- Climate Change Commission. (2011). *National Framework Strategy on Climate Change 2010- 2022*. Malacanang, Manila.
- FMB/DENR (2003). *Revised Master Plan for Forestry Development: Condensed Report*. Forest Management Bureau with Assistance from the FAO of UN. DENR, Visayas Avenue, Quezon City.
- FMB/DENR. (2015). *2014 Philippine Forestry Statistics*. FMB, DENR, Quezon City.
- FMB/DENR. (2004). *2003 Philippine Forestry Statistics*. FMB, DENR, Quezon City.
- NCSO, (2015). Population by Region Census Years 2000, 2010 and 2015.
- National Commission on Indigenous Peoples (NCIP). (2012). *Ancestral Domain Areas in the Philippines in Hectares*. Quezon City, Philippines.
- National Economic Development Authority/Philippine Development Plan (NEDA/PDP). (2011). *Philippine Development Plan 2011-2016*. Pasig City: National Economic and Development Authority. Manila, Philippines.
- <http://www.nscb.gov.ph>
- <https://en.wikipedia.org/wiki/Romblon>
- <https://en.wikipedia.org/wiki/Palawan>

ANNEXES

Annex 1. Comparative Advantages and Competitive Goods and Services, Region 4B

| Comparative Advantages | COMPETITIVE GOODS AND SERVICES | | | | | | | | | | |
|--|----------------------------------|------------------|--|-------------------|--------------------|------------------------------------|---------------------------------|---------------------------|---------|---------------------------------|-----------|
| | Kalamansi Rambutan, Banana | Mango, Cashew | Rice & Corn | Cattle | Fisheries | Water (irrigation, dom. Use) | Eco- tourism | Non timber products | REDD+ | Timber/ Fuelwood | Minerals |
| Vast areas of agric. lands | | | Mindoro, Palawan Marin- duque | | | | | | | | |
| Good climate, less typhoon | Oriental Mindoro | Palawan | | | | | | | | Palawan, Oriental Mindoro | |
| Watersheds & dams | | | | | | Mindoro, Palawan | | | | | |
| Existing Grazing land | | | | Mindoro Island | | | | | | | |
| Existing fruit orchards | Oriental Mindoro | Palawan | | | | | | | | | |
| established markets | Oriental Mindoro | Palawan | Occ. Mindoro | Mindoro Island | All province | | | | | | |
| Natural forests | | | | | | | Mindoro Palawan | Palawan, Mindoro | Palawan | | |
| Prot. Areas Biodiversity resources | | | | | Mindoro Palawan | Occ. Mindoro Palawan | Mindoro Palawan | | | | |
| Small Islands | | | | | | | All Prov. | | | | |
| Unique and Endemic Flora/ Fauna | | | | | | | Mindoro, Romblon Palawan; | | | | |
| Coastal and Marine Resources | | | | | All prov. | | All provinces | | | | |
| caves | | | | | | | All Prov. | | | | |
| beaches | | | | | | | All Prov. | | | | |
| mangroves | | | | | All Prov. | | Palawan | | Palawan | | |
| Business Investors | Oriental Mindoro | | Occ. Mindoro | | | | | Palawan, Mindoro | | | |
| Lakes and rivers | | | | | Mindoro Island | | Mindoro Palawan | | | | |
| Mineral Lands | | | | | | | | | | | All prov. |