

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

Region XIII (CARAGA Region)

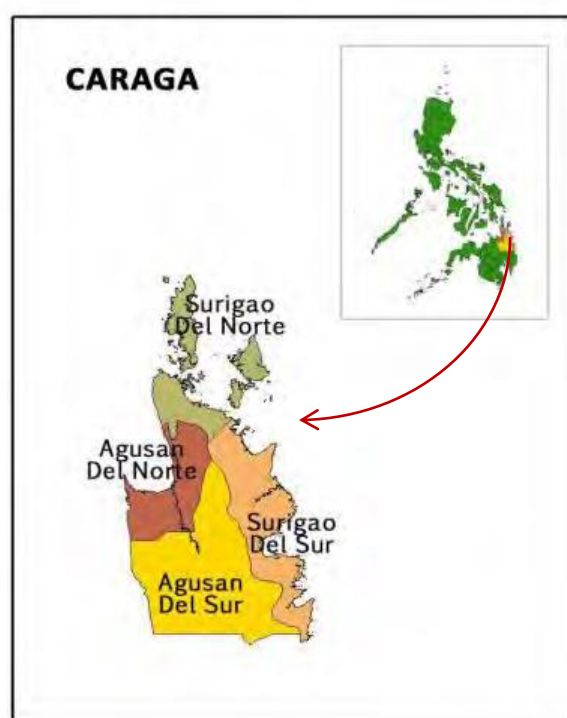
I. Background and Rationale

The first Philippine forestry master plan which was formulated in 1990 was revised in 2003 in view of new developments in the forestry and environment sectors both at the local and international scenes. Ten years after its implementation, the Forest Management Bureau (FMB) again 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 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 the action plan of DENR CARAGA region to support implementation of the PMPCRFD for CY 2016-2028.

Figure 1. Location of the CARAGA Region



II. Regional Profile

Region 13, commonly referred to as the Caraga Region, lies in the northeastern side of Mindanao. It is bounded by the Pacific Ocean on the east, the Bohol Sea and the Provinces of Misamis Oriental and Bukidnon on the west, and the Surigao Strait on the south. It can be reached by air, land, and sea travel.

2.1 Physical features

The region is characterized by mountainous areas, flat and rolling lands. Mountain ranges divide Agusan and Surigao provinces and

sub-ranges separate most of the lowlands along the Pacific coast. The mainland and clustered islands of Surigao City has irregular or hilly topography with flat lands near the coast. It has an average elevation level of 19 meters or 65.5 ft. above sea level. The highest elevation in the mainland is the Kabangkaan Ridge situated along the border of the Municipality of San Francisco with a peak elevation of 465 meters above sea level. Along the border of Tagana-an is the Mapawa peak with an elevation of 245 meters above sea level with scattered descending slopes covering the barangays of Cabongbongan, Nabago and Capalayan.

In the Islands, the highest range is the island of Nonoc with an elevation of 263 meters above sea level, overlooking the Cantiasay Channel and the Island of Hanigad with a peak elevation of 163 meters. The highest point in Hikdop Island is in Mt. Telegrafo with a peak of 250 meters. The Island of Bayagnan located on the eastern part of Surigao City has a highest elevation of 242 meters

The prevailing climate in the region falls under climate Type II with no definite dry season but with a pronounced maximum rainfall from November to January. There are 242 rainy days within the year and the average temperature is about 26.9 degrees centigrade with an average humidity of 84%. The region is located outside the typhoon belt (Source: Wikipedia)

2.2 Socio-Economic Profile

Region 13 embraces the four (4) Provinces of Agusan del Norte, Agusan del Sur, Surigao del Norte, and Surigao del Sur, and the three (3) cities of Butuan, Surigao and Bislig. The region is noted for its wood based economy, its extensive water resources and its rich mineral deposits such as iron, gold, silver, nickel, chromite, manganese and copper. Its leading crops are palay, banana and coconut. The region features several beaches, abundant seafood, hot and cold springs, evergreen forests and balmy weather. (Source: Wikipedia)

Major agricultural products of the region include palay, corn, coconut, banana, rubber, oil palm, calamansi, prawns, milkfish, crabs, and seaweeds. Caraga's proximity to Cebu and Manila makes it a favorable shipping point for products to and from these markets. Nasipit Port can serve as a secondary shipping hub to Cagayan de Oro when traffic volume from other points in Mindanao increases. With a roll-on, roll-off (RORO) ferry service now in place, Surigao City serves as a vital transportation link for trucks and buses bound for Luzon. (Wikipedia)

Based on the 2015 national census CARAGA has a total population of 2,596,709. Its average annual population growth rate from 2000 to 2015 is about 1.42%. Agusan del Sur is the most populated province but Surigao del Norte has the highest annual population growth rate at 1.71% (Table 1).

Table 1. Population and Annual Population Growth Rates of CARAGA

Provinces	Population			Annual Pop. Growth Rate		
	May 2000	May 2010	Aug. 2015	2000-2010	2010-2015	2000-2015
REGION XIII (Caraga)	2,095,367	2,429,224	2,596,709	1.49	1.28	1.42

Provinces	Population			Annual Pop. Growth Rate		
	May 2000	May 2010	Aug. 2015	2000-2010	2010-2015	2000-2015
AGUSAN DEL NORTE (excluding BUTUAN CITY)	285,570	332,487	354,503	1.53	1.23	1.43
BUTUAN CITY	267,279	309,709	337,063	1.48	1.62	1.53
AGUSAN DEL SUR	559,294	656,418	700,653	1.61	1.25	1.49
SURIGAO DEL NORTE	374,465	442,588	485,088	1.68	1.76	1.71
SURIGAO DEL SUR	501,808	561,219	592,250	1.12	1.03	1.09
DINAGAT ISLANDS	106,951	126,803	127,152	1.72	0.05	1.14

Source: PSA, CY 2000, 2010, 2015

2.3 Resources

CARAGA region is considered as a gold country. Its jewel lies in the region's vast forest, fertile mountains and valleys, seas, rivers, lakes, mineral deposits, people and other natural endowments. The Philippines' largest freshwater wetland and largest mangrove swamp nestled within this region. The deepest waters in the country --- some of the deepest in the world --- lie just off its shores. Its borders encompass Agusan del Sur, where the Philippines largest gold deposit is found.

Land Resources

CARAGA has a total land area of 1,884,697 hectares. Of this, 71 % or 1,339,800 hectares are classified as forestlands while 29% or 544,897 hectares are alienable and disposable lands (table 2). Most of the forestlands are situated in the provinces of Agusan del Norte and Surigao del Sur.

Table 2. Land Classification in CARAGA

Land Classification	Area (ha)	%
Forestlands	1,339,800	71%
Classified Forestlands	1,332,011	70.7%
Established Timberlands	992,131	53%
Forest Reserves, National Park/ Prot. Areas & Other Reservations	339,880	18%
Unclassified forestlands	7,789	0.4%
Alienable and disposable lands	544,897	29%
Total	1,884,697	100%

Source: Philippine Forestry Statistics, CY 2014

Forests Resources

About 36% (683,112 hectares) of the region's land area are still forested consisting of open forest (29.5%), closed forest (5.3%), and mangrove forests (1.3%). Most of the forests are located in Agusan del Sur (342,736 ha.) followed by Surigao del Sur (226,805 ha). Dinagat

Island has the least forest, covering only an estimated area of 27,419 hectares. Table 3 summarizes the land cover per province in CARAGA for CY 2010.

Table 3. Land Cover of CARAGA, CY 2010

Province	Land Area	Total Forest	Close Forest	Open Forest	Mangrove Forest	% of Region Forest	% of Prov. Forested	% of total Forest Closed
Region 13	1,884,697	683,112	99,812	557,402	25,898	36%	36%	15%
Agusan del Norte	259,029	50,882	2,217	47,433	1,231	3%	20%	4%
Agusan del Sur	896,550	342,736	57,208	285,529	0	18%	38%	17%
Dinagat Islands	273,902	27,419	5,641	19,418	2,360	1%	23%	21%
Surigao del Norte		35,270	7,139	14,896	13,234	2%		20%
Surigao del Sur	455,216	226,805	27,606	190,127	9,072	12%	50%	12%

Source: Phil Forestry Statistics, CY 2014

In general, there was an increase in the forest cover of CARAGA. From about 523,292 hectares in 2003 its total forest (close, open and mangrove forests) has increased to 683,112 hectares in 2010. This means that around 159,819 hectares of forests were added in CARAGA in a span of 7 years or an annual increase of 22,831.29 hectares. While there was an overall increase in forest cover, Surigao del Norte lost more than 50% (40,781 hectares) of its total forest in 2003. This province therefore is critical in terms of forest protection and conservation as it registered a net loss in forest cover from all types of forests (close, open and mangrove). Agusan del Norte also registered a net loss (1,143 hectares) in all forest types although at lower rate compared to Surigao del Norte. In contrast, the provinces of Agusan del Sur and Surigao del Sur registered an increase in forest cover for all types of forests. The forest cover change in CARAGA is summarized in table 4.

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

Provinces	Close Forest			Open Forest			Mangrove Forest			Net Change
	2010	2003	Change	2010	2003	Change	2010	2003	Change	
Agusan del Norte	2,217	2247	(30)	47,433	48,444	(1,011)	1,231	1333	(102)	(1,143)
Agusan del Sur	57,208	23470	33,738	285,529	226,024	59,505	0	0	0	93,243
Dinagat Islands	5,641		5,641	19,418		19,418	2,360		2,360	27,419
Surigao del Norte	7,139	22364	(15,225)	14,896	36,863	(21,967)	13,234	16823	(3,589)	(40,781)
Surigao del Sur	27,606	16648	10,958	190,127	120,501	69,626	9,072	8575	497	81,081
Region 13 Total*	99,811	64,729	35,082	557,403	431,832	125,571	25,897	26,731	-834	159,819

* Include plantations

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

Water resources

CARAGA is drained by many river systems that are used for irrigation and domestic/ industrial purposes. It has 12 watershed forest reserves covering approximately 81,842 hectares (table 5). Many of its watersheds support national irrigation systems as indicated in table 6.

Aside from the rivers and watersheds, there are other important water bodies in the region that support livelihood of local communities. The well-known Agusan Marsh sits in the middle of Agusan del Sur where indigenous peoples reside. A number of lakes also exist. Among the lakes in the region, Lake Mainit is the widest. It traverses the municipalities of Alegria, Tubod, Mainit and Sison in Surigao del Norte, and Tubay, Santiago, Jabonga and Kitcharao in Agusan del Norte. This lake is mainly used for fishing that provide livelihood to surrounding communities.

Table 5. List of Watershed Forest Reserves in CARAGA

Name of Reserve	Location	Area (ha)	Proc. No.
Region 13		81,842	13,823
Adlay Watershed Forest Reserve	Carrascal	27	291
Alamio River Watershed	Cantilan	5085	1747
Alfred Spring Watershed Forest Reserve	Bunawan	100	1236
Andanan River Watershed Forest Reserve	Sibagat and Bayugan	15,097	734
Buyaan River Watershed	Madrid	6,683	1747
Cabadbaran Watershed Forest Reserve	Cabadbaran	16,025	834
Carac-an River Watershed	Madrid	23,570	1747
Mt. Magdiwata Watershed Forest Reserve	San Francisco	1,658	282
Panikian River Watershed	Carrascal	7,045	1747
Sipangpang Falls Watershed	Cantilan	1,218	1747
Surigao Watershed Forest Reserve	Sison, Malinao San Francisco	967	635
Taguibo River Watershed Forest Reserve	Butuan City, Remedios Trinidad, Romualdez and Cabadbaran	4,367	1076

Source: Philippine Forestry Statistics, 2014

Table 6. Watersheds Supporting NIA Irrigation Systems (NIS) in CARAGA Region

River Basin	Name of Watershed	NIS Supported	Province	Municipality	Watershed Area NIA (ha)	NIS Service Area (In ha)
Cabadbaran RB	Cabadbaran River Watershed	Cabadbaran RIS	Agusan del Norte	Cabadbaran	7,350	3,213
Agusan RB	Taguibo River	Taguibo RIS	Agusan del Norte	Butuan City, Cabadbaran	8,430	2,158
Agusan RB	Andanan River Watershed	Andanan RIS	Agusan del Sur	Bayugan	19,200	5,000
Agusan RB	Simulao River Watershed	Simulao RIS	Agusan del Sur, Surigao del Sur	Bunawan & Trento, Bislig & Lingig	42,900	2,540
Caracan RB	Caracan River Watershed	Cantilan RIS	Surigao del Sur, Agusan del Norte	Madrid, Jagupit	12,180	1,785
Tago RB	Tago River Watershed	Tago RIS	Surigao del Sur, Agusan del Sur	Tago, Cagwit, Bayugan	118,000	3,716
Total					208,060	18,412

Biodiversity Resources

The region contains one of the last ecological frontiers of the Philippines. It is home to 12 Key Biodiversity Areas identified by Haribon Foundation and the Department of Environment and Natural Resources. The Key Biodiversity Areas include: Mt. Kambinliw and Mt. Redondo in Dinagat Islands which is home to the critically endangered Dinagat bushy-tailed cloud rat which was recently rediscovered after decades of disappearance, the endangered Dinagat hairy-tailed rat, Dinagat Gymnure which has been declared by the EDGE Species Programme of the Zoological Society of London as one of the top 100 most evolutionary distinct and globally endangered species in the world, and a strange sub-species of the Philippine Tarsier which is unusually larger and darker in color than the common Philippine tarsier; Carrascal Bay in Surigao del Sur; Consuelo and General Islands in Surigao del Sur; Mt. Hilong-hilong which is shared by Agusan del Norte, Agusan del Sur, Surigao del Norte, and Surigao del Sur and is regarded as one of the most expansive home of the critically endangered Philippine Eagle; Magsaysay in Agusan del Norte; Mt. Kaluayan-Mt. Kinabalian which is shared between Agusan del Sur, and Northern Mindanao's Bukidnon province; Cagwait in Surigao del Sur; Mt. Diwata Range which is shared between Agusan del Sur and Surigao del Sur and is a focal point in the West Mindanao Ecological Frontier; Hinatuan Bay in Surigao del Sur which is famous for its Hinatuan Enchanted River; Bislig Rainforest between Agusan del Sur and Surigao del Sur; and Agusan Marsh Wildlife Sanctuary in Agusan del Sur. (Source: Wikipedia)

In addition, five areas in CARAGA region have been declared by law as protected area and components of the National Integrated Protected Areas System (NIPAS) in the Philippines (table 7).

Table 7. List of Protected Areas in CARAGA

Name	Location	Area (ha)	PA Classification
Siargao Island	Surigao del Norte	278,914.13	Protected Landscape
Awasan Bay Islands	Surigao del Norte		Wilderness Areas
Panag Bay Islands	Surigao del Norte		Wilderness Areas
Rasa Island	Surigao del Norte		Wilderness Areas
Agusan Marsh	Agusan del Sur	14,835.99	Wildlife Sanctuary
TOTAL		293,750.12	

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

Nature-Based Tourism Areas

Most of the tourist destinations in the CARAGA region are anchored on protected areas and other natural resources. The following are among the favourite tourist destinations and tourism activities in region 13:

Siargao Island Protected Landscape and Seascape

Siargao, popularly known as the "surfing capital of the Philippines", hosts an annual international surfing event. The huge "pacific rollers" have been ranked among the top five

breaks in the world, including the "Cloud Nine" considered as one of the world's top surfing waves. Other breaks, which offer exploratory surfing without crowds, are found in the towns of Cantilan, Tandag and Lanuza.

Islands

The islets and islands of Guyam, Daku, Naked or Pansukian, La Janosa, Pig-ot, Dinagat, Bucas Grande, Britania and the General island in Cantilan feature white-sand beaches which are ringed by coral reefs suitable for swimming and snorkeling. Other attractions include naturally-carved water channels amidst mangrove forests in Barangay Manjagao; the floating village of Barangay Dayasan, the Buenavista Cave; and the tropical white sand beaches in Sagisi island. The Britania in San Agustin-Surigao del Sur features 25 islets and islands of white sand and clusters of limestone hills.

Mountain-biking

Biking trails within Butuan, Surigao City, Surigao del Sur, Agusan del Norte and Siargao play host to cross-country and downhill competitions participated by local and international bikers.

Trekking

Mt. Mas-ai and Mt. Hilong-Hilong features panoramic views of the vast lower Agusan Valley. Close to Mt. Mas-ai lies Lake Mainit, the fourth-largest lake in the country, with an area of 147 square kilometres (57 sq mi). Through the years, the lake has been a known lair for pidjanga, tilapia, kasili, banak, haw-an, gingaw, saguyon and igi. Migratory birds, pagosi and tabokali flowers are its intermittent added attractions.

Mangroves

The 8,000-hectare (80 km²) mangrove forests in Del Carmen form one of the largest contiguous mangrove forests in the Philippines which is popularly visited by tourists..

Caves

The limestone karst bedrock of some areas in Surigao and Agusan provinces (particularly in the towns of San Agustin, Tagbina, Lianga, Rosario, and Bislig) features several caves, but none of these are regular destinations for recreational cavers. Located within the towns of Tagbina and Bislig, Banbow and Tatol caves (which are ranked the 6th and 9th longest caves in the Philippines) have recently been declared by the Japanese cave explorers as the third longest cave in the country. Some of the most frequently visited and accessible caves in the region are the Buenavista and Silop Caves in Surigao City and the Libas Cave in Jabonga-Agusan del Norte. These caves have limestone formations and naturally carved stalagmites, stalactites and columns. Sohoton Cave and Lagoon in Bucas Grande Island, which is more than an hour boat ride from Siargao, features limestone formations to a point where one enters a narrow channel which soon becomes a cave.

Agusan Marsh

The 14,000-hectare (140 km²) Agusan Marsh in Agusan del Sur is one of the biggest wetlands in the country and is host to diverse species of birds.

Coastal and Marine Resources.

The CARAGA region has abundant coastal and marine resources. Its island ecosystems are rich in marine biodiversity and provide destinations both for local and foreign tourists. The mangrove areas in SIARGAO which is one of the biggest contiguous mangroves in the country support important fisheries resources and is a major tourist attraction that significantly contribute to local and regional economy.

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 CARAGA, the estimated increase in temperature will range from 1.7°C to 2.6°C, with higher temperature increase during the months of June to August. Meanwhile, decrease in rainfall is estimated to range from -2.9% to -36.5%. Higher reduction in rainfall is expected from March to May, while up to 13.8% increase in rainfall is expected during the rainy months of December, January and February. (table 8 and 9).

Table 8. Seasonal temperature increases in 2050 under medium-range emission scenario, CARAGA

Provinces	Observed Baseline in °C (1971-2000)				Change in 2050 in °C (2036-2065)			
	DJF	MAM	JJA	SON	DJF	MAM	JJA	SON
Agusan del Norte	26.2	27.6	27.8	27.4	1.9	2.3	2.5	2.2
Agusan del Sur	25.9	27..1	27.2	26.9	1.9	2.2	2.4	2.1
Surigao del Norte	26.3	27.6	28.2	27.7	1.7	2.2	2.6	2.0
Surigao del Sur	26.4	27.4	27.9	27.4	1.7	2.0	2.3	2.0

Source: PAGASA, 2011

Table 9. Seasonal rainfall change (in %) in 2050 under medium-range emission scenario in CARAGA

Provinces	Observed Baseline (1971-2000)				Change in 2050 (2036-2065)			
	DJF	MAM	JJA	SON	DJF	MAM	JJA	SON
Agusan del Norte	875.7	441.9	460.0	628.9	13.8	-36.5	-8.3	0.6
Agusan del Sur	963.3	586.4	593.4	694.8	-2.9	-26.1	-3.4	-5.9
Surigao del Norte	1412.0	639.6	448.0	837.3	3.2	-33.2	-8.7	9.6
Surigao del Sur	1394	746.9	534.6	842.5	4.0	-29.1	-7.9	-3.7

Source: PAGASA (2011)

With more rains during the season, floods, soil erosion and landslide may be aggravated endangering lives and properties of communities. Thus, the current flooding incidence in Butuan city will be more severe in the coming years. On the other hand, with less rains during the dry season, water availability for irrigation and domestic/industrial uses will be adversely affected. Lesser areas will be irrigated by NIA irrigation systems, particularly those enumerated in table 6. At the same time, forest fire will intensify due to the higher temperature increase in Mindanao. Biodiversity resources specially those in higher

elevations and in coastal areas are also threatened as temperature increases since some species may be unable to survive at certain temperatures. Apart from flooding, landslide, forest fire and biodiversity loss, some islands in the region are also vulnerable to storm surge and tsunami.

III. Development Challenges in the Forestry Sector of CARAGA

The challenges faced by the forestry sector in CARAGA Region is summarized in the succeeding discussions.

1. There is a need to intensify protection of existing forests in Surigao del Norte and Agusan del Norte. While the general trend is that forest cover is increasing in CARAGA, these provinces registered significant loss in forest cover for all forest types, especially in Surigao del Norte, where the average annual forest loss is about 5,825 hectares.
2. The protection and rehabilitation of watersheds must be given priority attention to ensure adequate supply of water for irrigation, and domestic/ industrial use. About 18,400 hectares of NIS service areas are dependent on the watersheds of the region for irrigation. Thus, the protection of these watersheds is crucial to ensure food security in the region. The ability of these watersheds to continuously supply irrigation and domestic water may be compromised if land uses within the watersheds are not harmonized.
3. Biodiversity loss is a critical problem that has been going on in Surigao del Norte. Significant areas of close forests and mangrove forests (15,225 hectares and 3,589 hectares, respectively) were lost in this province from 2003 to 2010 which may contain important species of flora and fauna, some of which may be highly threatened and endangered
4. Reducing the impacts of climate change hazards should also be given priority attention. Many areas in CARAGA is vulnerable to climate related hazards such as, floods, landslides, storm surge, forest fires and biodiversity loss. The increased frequency and intensity of these hazards, aggravated by changes in climatic conditions, will continue to endanger the lives, properties and livelihood of communities. Most LGUs and majority of the population are not prepared for hazards and communities are not organized for disaster risk reduction. A comprehensive disaster risk reduction plan and climate change adaptation plan is therefore necessary to respond to these threats. It is also imperative to harmonize land uses from ridge to reef through the integration of the forest land use plan of LGUs to their comprehensive land use plans
5. There is a need to develop tree plantations in the CARAGA region to help respond to national demand for timber as a result of population increase and expanding economy of the country. Because of the moratorium on timber harvesting in natural forests, wood demand in the Philippines has been addressed mainly through wood imports which drains much of our foreign exchange reserve. In view of this it is necessary to establish forest plantations locally to internally meet wood demand in the country. The Mindanao region, which includes region 13, is more in a position to respond to this need because of the favourable climatic conditions for tree plantation development.

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 CARAGA include the following:

1. It has vast areas of agricultural lands in suited for the production of rice, and other crops;
2. Presence of watershed reservations that provide water for dams and other reservoirs for irrigation and for domestic/ industrial use;
3. Extensive areas of forests, lakes, rivers, biodiversity resources, protected areas, and marine resources that are potential for ecotourism;
4. Existing plantations of fruit trees that provide livelihood to local population and which have potential for agroforestry farms;
5. Established markets for various products such as rice, rubber and other non-timber products;
6. Presence of mangroves and coastal resources that support fisheries and ecotourism;
7. Relatively high rainfall in most provinces
8. Low exposure to typhoon
9. There are many private investors will to develop plantations in the region

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
2. Timber
3. Rice
4. Fruits, such as durian
5. Fisheries products
6. Water production for domestic use and to support rice production;
7. Rubber
8. Coffee
9. Cacao and
10. REDD+ implementation

The matrix of comparative advantages and competitive goods and services of CARAGA as identified by DENR CARAGA 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 CARAGA will focus on the following:

1. Protection of existing forests to support ecotourism, hazard mitigation and watershed management for irrigation and domestic water supply;
2. Harmonization of land uses through integration of forest land uses into the LGUs comprehensive land use plans;
3. Forest Plantation development to address national demand for timber;

4. Rehabilitation of other protection forests to mitigate climate change hazards such as flooding and landslide;
5. Agroforestry farm development to diversify livelihood & support production of rubber, fruit trees and other crops. Rehabilitation of degraded mangroves for fisheries, disaster risk reduction and ecotourism;
7. REDD+ implementation to conserve existing forests ; and
8. Institutionalizing collaborative management

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 integrating the forest land use plans of 27 LGUs into their comprehensive land use plans;
2. To undertake vulnerability assessment and adaptation planning in 23 priority watersheds;
3. To formulate the integrated watershed management plan of 19 priority watersheds;
4. To protect 692,983 hectares of existing forests and plantations starting in 2016 gradually increasing to 950,292 hectares in 2028;
5. To diversify livelihood of local communities by developing 55,543 hectares of agroforestry farms;
6. To rehabilitate 31,940 hectares of protection forests through assisted natural regeneration;
7. Rehabilitate 6,394 hectares of degraded mangrove areas and
8. Implement REDD+ in Agusan del Sur and Surigao del Sur

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.)	7	14	2	23
2. Formulation of integrated watershed	1	14	4	19

Strategic Programs and Activities	Targets and Implementation Period			
	2016	2017 -2022	2023 -2028	Total
management plans (no.)				
3. Updating of IWMP (No)	0	1	0	1
4. FLUP formulation (no. of LGUs)	4	23	0	27
5. Protection of existing forests and plantations including mangroves (ha)	692,983	832,875	950,292	950,292
6. Mangrove rehabilitation (ha)	4,677	1,717	0	6,394
7. Agroforestry development (mixed crops in ha)	8,036	47,487	0	55,543
8. Rehabilitation of protection forests (ANR) in ha.	0	10,632	21,308	31,940
9. Training on vulnerability assessment, adaptation planning, integrated pest management, IWM, FLUP (no. of training)	1	30	30	61

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 CARAGA will give more focus on addressing demands for timber, agroforestry products such as rubber and fruit trees, water, biodiversity for ecotourism, and the need to reduce disaster risks and improve environmental conditions especially in urban centers..

Objectives

The specific objectives of this program are:

1. To develop 186,010 hectares of tree plantations for timber production;
2. To rehabilitate 1,000 hectares in priority watersheds for domestic and industrial use and for irrigation to support production of rice and other agricultural crops;
3. To develop forest parks, and green belts in 16 key cities and urban centers of the region
4. To demarcate on the ground all forestlands 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	1,339,800	0	1,339,800
2. Development of seed production areas in all provinces(no.of sites)	2	2	2	2
3. Establishment of mechanized nurseries (no.)	1	0	0	1
4. Development of forest plantations for timber	9,024	82,000	94,986	186,010
5. Watershed rehabilitation				
Vegetative SWC (ha)	171	829	0	1,000
Structural soil and water conservation (cu. Meters)	0	235	0	235

Strategic Activities	Targets and Implementation Period			
	2016	2017 -2022	2023 -2028	Total
Organization and capacitation of watershed management bodies , such as the watershed management council (no.)	1	5	5	5
6. Support to urban forestry in major cities and urban centers (LGUs assisted)	0	8	8	16

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 situation, 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 Philippine forestry master plan and
3. 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 CARAGA are summarized in table 12.

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

Strategic Programs and Activities	Targets per Implementation Period			
	2016	2017 -2022	2023 -2028	Total
Promoting Responsive Governance				
1. Inventory of forest occupants (No.)	0	27	0	27
2. Tenure issuance in open access forestlands (ha)	0	25,000	75,000	100,000
3. Organization and capacitation of multi-sectoral collaborative management bodies (region and province)		15	15	15
4. Creation and operationalization of regional/provincial TWG on climate change (no.)	0	5	5	5
5. Capability enhancement for DENR/ LGUs (no. of trainings)	16	30	30	76
6. Semi-annual / annual monitoring and evaluation of PMPCRFD implementation (No.)	2	12	12	26
7. Performance assessment of tenure holders (No.)	1	6	6	13

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)	15	27	42	42
2. Upgrading of regional MIS facilities (no.)	1	5	5	1
3. Implementation of forest certification (Provinces)	0	4	4	4
4. Identification and assessment of sustainable sources of financing in forestry projects (No. of sites assessed)	0	4	4	8
5.Forestry research (no. of studies)	3	6	6	15

VI. Plan Implementation

This regional action plan shall be implemented by DENR CARAGA 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, protected 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. Attachment 4 presents the distribution of regional forestry targets by fund sources.

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ANNEXES

Annex 1. Comparative Advantages and Competitive Goods and Services, CARAGA Region

Comparative advantages	COMPETITIVE GOODS AND SERVICES									
	Durian & fruits	Rice	Timber	water	ecotourism	fisheries	rubber	cacao	coffee	REDD+
Vast areas of A & D lands		X								
Existing watersheds		X		X						X
less typhoons	X		X				X			
more rainfall	X		X				X	X	X	
dams for irrigation		X		X						
Existing tree plantations			X				X			
fruit orchards	X				X					
established markets	X	X	X			X	X	X	X	
Processing plants			X				X			
Natural forests				X	X					Surigao del Sur, Agusan del Sur
Protected areas				X	X					X
caves, waterfalls, lakes, rivers, beaches					X					
mangroves					X	X				X
Private investors	X		X		X	X	X	X	X	

