

**REDD CARBON MARKET POTENTIAL DEVELOPMENT
IN WEST PAPUA PROVINCE**
(A Framework for Identifying Various Demonstration Project and Investment)

¹⁾ FRI Manokwari and ²⁾ West Papua Province Forestry and Plantation Services

I. INTRODUCTION

1. Background

Momentum of the establishment Region of West Papua and the formation of regional autonomy as stipulated in Law Number 22 Year 1999 and Law Number 25 year 1999 confirm the existence of the process of devolution of wider authority for the region of West Papua in managing their own household. This includes the authority to regulate their own natural resources management. This momentum has pushed the basic governance, development and societal development. Because, basically, that authority is also attached considerable responsibility. Therefore, in laying the foundations of their implementation needs to be done in a transparent manner by involving the various parties. Besides that, it became important also for West Papua to immediately establish a clear vision and mission, concrete and long-term oriented.

Meanwhile, empirical conditions showed that West Papua public is aware of the momentum shift in authority as the formation of their opportunities to get involved directly in the overall phase of the development process in West Papua. Awareness was also marked by the increasing public demands, that they no longer merely as objects of development. Another aspiration is realized are expected to obtain recognition of indigenous rights, such as indigenous rights in forest management. Fulfillments of these aspirations have not seen from the perception of differences (conflict) in West Papua. Conflict raised generally related to the utilization of natural resources. Therefore, the aspiration towards improvement of regional policies especially in the management of natural resources and forests tend to increase.

Empirical conditions mentioned above are basically indicates that the governance, development and social development must be supported by application of the principles of good governance, namely the openness (transparency), the involvement of the parties (participative), responsibility, accountability, democratic and public oriented. These principles should serve as a basis in all areas of development especially in the preparation, determination, and implementation of development programs including the implementation of climate change policies in the forestry sector of West Papua West.

2. Objective

The objective of this paper is to present a framework that can be used as the basis for the test and development capacity by the Government of West Papua Province in order to enter into and maximize international financial support in the field of sustainable forest management that is able to maintain and enhance a variety of carbon stock contained therein.

¹ Thomas Nifinluri, Sandhi Imam Maulana, Jonny Holbert Panjaitan, Cahyo Riyadi

² Marthen Rumadas, Gembong Winduaji, Jimmy

II. PORTRAIT FORESTRY WEST PAPUA

1. General state of West Papua's Forestry

Papua consists of two provinces of Papua and West Papua Province is located in the most eastern region of Indonesia with an area of 42.22 million ha (based on Ministerial Decree Number 891/Kpts-II/1999), of which 39.39 million ha of forest area or equivalent with 3.5 times the size of Java island. The forest area in West Papua Province is 9.4276 million ha. West Papua geographically bounded by the Pacific Ocean in the North and Arafuru Sea with Banda Sea in the south. in the East located Papua province and in the west located Maluku Province.

West Papua's forests is one of *the Global Tropical Wilderness Areas* other than Amazon Rainforest and Tropical Forests of the Congo, and also The Larger, most complete and unique Tropical Rain Forest Ecosystem stretch from coast to mountain top. West Papua's forests are included in the World's Tropical Biodiversity Hotspots because it has a very high level of endemic biodiversity.

Based on data from Institute Strengthening Forest Region XVII Manokwari in 2008, forest resource balance of the forest area in West Papua Province year 2008 is approximately 9,384,724 ha of Conservation Area covering an area of 2,814,275 ha (29.9%); an area of 1.70823 million hectares of protected forests (18.2%); and Forests Limited production area of 922 937 ha (9.83%), Forest Production is an area of 1,733,207 ha (18.47%) and Convertible Production Forest covering 2,206,074 ha (23.51%). Under the conditions of land cover is known that the primary forest area of 5,768,907 ha (61.47%), secondary forest/ logged-over are 2.812.961 Ha (29.97%), and are not forested area of 802 856 ha (8.55%).

Economy

Forest utilization in the form of forest concessions (HPH) and Forest Product Harvesting Rights (HPHH) in West Papua in 1983 began to be marked with survey activities to obtain reserve forest concession. Timber production in West Papua has fluctuated and tended to decrease, the realization of the lowest wood production was recorded at 1.2 million m³/year in the year 2008. The realization of the highest production occurred in the year 2009 amounted to 1.339 million m³/year.

Forest Utilization in West Papua

On the island of Papua is expected to grow 20000-30000 woody plant species, 330 kinds of reptiles and amphibians, 650 species of birds, 164 species of mammals and 750 species of butterflies (CI. 1999). Population and the distribution of wealth are currently experiencing a decrease as a result of less utilization of forest resources wisely among others: the excessive utilization (flora / fauna), the conversion of forest area, natural disasters and forest fires. Based on management status, the forests in West Papua consist of State Forest and Forest Rights. State Forest is a forest that is located on land that is not encumbered land rights, and forests rights are located on land granted land rights.

With the existence of Law Number 25 of 1999 on Financial Balance between Central and Local Government and Law Number 22 Year 1999 on Regional Government, which was revised by Law 32 of 2004 has given a greater role to the local government in governance, including in the

forestry sector. It is further contemplated by the Law number 41 Year 1999 of forestry which is the legal basis for the recognition of indigenous rights.

In the Law No.21 Year 2001 regarding Special Autonomy describes explicitly about customary law community involvement in forest management and to gain direct benefits from the forest. In more detail the implementation of these laws are described in two Ministry of Forestry and Plantations decree about community rights to forest resources. This decision is used as a legal basis by the local government to develop policies which aim to protect people's rights by requiring concessionaires provide compensation to local communities over their land use and forest. New policies are also set about the rights of local communities on indigenous forest within the concession area.

West Papua's forest management system through the granting of forest concessions has been running for more than three decades, recognized the positive impact on local and national economic growth, opening up isolated areas and employment, but still leaves many issues related to environmental and socio-cultural. This occurs because the paradigm for forest stewardship West Papua is synonymous with taking care of the Tree (Timber-Based Management) and not taking care of forest resources (Resources Based Management Forest). The new policy and paradigm in the context of the forests utilization in West Papua on Forest Resources Based Management in accordance with the characteristics of the typology and function of forests, forest resources, and socio-cultural community, are most expected to become policy and forestry development programs in West Papua's special autonomy which effective 16 years more.

Shape-based West Papuan forest stewardship of forest resources that can be built and integrated to manage the forest resources of West Papua in a sustainable manner as the embodiment of New Policy on Sustainable Forestry Management in West Papua is through the Forest Management Unit (FMU). Inside this FMU, forest area and forest resources of West Papua can be managed in a sustainable manner based on the principles of economically viable, environmentally benign, technically feasible, and socially acceptable to encourage the acceleration of development in West Papua and in particular improving the welfare of indigenous peoples as owners of communal rights (hak Ulayat).

Timber Production

Production of processed wood in the province of West Papua since the year 2003-2008 showed fluctuations which occur in the lowest production in 2006 amounted to 2,903 m³ and the highest production in 2008 amounted to 29,196 m³ as shown in table 1.

Table 1. Sawn timber production in the province of West Papua in 2003 -2008 (in M3)

2003	2004	2005	2006	2007	2008
8,878	11,061		2,903	9,333	29,196

Source: Directorate General of Forestry Planning (2009)

Plywood production in the province of West Papua shows a declining trend since the year 2003 amounted to 107,144 m³ to 27,816 m³ in the year 2008 as shown in table 2.

Table 2. Plywood Production in West Papua Province Year 2003 -2008 (in M3)

2003	2004	2005	2006	2007	2008
107,144	84,774		53,947	47,821	27,816

Source: Directorate General of Forestry Planning (2009)

Data block board production in the province of West Papua in 2007 only amounted to 204,066.3 m3 as shown in table 3.

Table 3. Production Block Board in West Papua Province in 2003 -2008 (in M3)

2003	2004	2005	2006	2007	2008
				204066.3	

Source: Directorate General of Forestry Planning (2009)

Veneer production in the province of West Papua, began the year 2007 amounted to 2203.9 m3 to 6539 m3 and an increase in the year 2008 as shown in table 4.

Table 4. Production of Veneer in West Papua Province Year 2003 -2008 (in M3)

2003	2004	2005	2006	2007	2008
				2,203.9	6,539

Source: Directorate General of Forestry Planning (2009)

Legal Aspects of Forest Management

Special Autonomy (Law No. 21 Year 2001) for the Province of West Papua which came into force in 2002 has provided unique opportunities for West Papua to plan its own development strategy taking into account local conditions and aspirations towards a prosperous society. Included in the development of the forestry sector, West Papua has the right set of development strategies. It is also synchronized with the Law No. 22 Year 1999 and Law No. 25 Year 1999.

Construction and development FMU

FMU is an of forest management activities that include forest governance and forest management planning, forest utilization, forest use, rehabilitation and reclamation of forest and forest protection and nature conservation (Government Decree No. 6 Year 2007). In the context of West Papua, West Papua's forests are divided up in units FMU areas that have clear boundaries either in field or in the map. In addition to the objectives for the overall broader FMU units, in a sub-unit of sub units FMU possible to be managed in different management regimes and separate.

Forestry problems in West Papua including the management of various functions and benefits of forests, conflict regulation, law enforcement, border forest areas which not yet settled and human resource issues in the forestry sector caused by some factors, including the cultivation of forest area, non-cultivated forest and protected forests will provide huge benefits, especially economic interests. But the impact of this forest utilization will influence the occurrence of forest destruction, such as erosion and flooding.

Forest Management Unit is the area of forest management and its allocation according to the principal function, which can be managed efficiently, and sustainably. An FMU is geared

towards sustainable forest management promoting increased economic value of forest utilization (Government Decree No. 6 in 2007). Forest Management Unit (FMU) is the area closure is dominated by forests and has clear boundaries, which managed to meet a series of goals that are explicitly defined according to the long-term management plan.

In the framework of the formation and development of FMU was determined by the Minister of Forestry as much as 21 FMU units in the province of West Papua which consists of 16 units FMU-Production and five units FMU-Protected. Subsequently one unit of FMU-Production has been established as directed KPH model in Sorong.

III. VARIOUS PROJECT IMPLEMENTATION PRINCIPLES DETERMINATION in REDD DEMONSTRATION

By maintaining and enhancing carbon stocks, West Papua Provincial Government can meet the commitment that has already been declared by the central government to become a leader among other tropical countries in terms of climate change mitigation. In addition, various landscape ecological processes related to water management, soil fertility and biodiversity would remain intact. With reverse the trend of forest loss and degradation of forests using a variety of potential resources that could be provided within the framework of REDD. West Papua Provincial Government can increase its capacity to support million populations living in and around the forest. The provincial government is also expected to explore various alternative patterns of development that can provide significant economic opportunities that can reduce poverty and maintain its healthy clean environment and particularly on the population directly affected by water pollution air.

This paper will discuss three main issues, namely:

- 1) The principles determining the implementation of demonstration projects.
- 2) Achieving *compliance market* readiness in *post*-2012 eras.
- 3) Various recommended strategies to reduce deforestation and forest degradation.

1. REDD and Supply Chain Demonstration Project

The main principle in the implementation of demonstration projects are testing against various challenges in generating carbon credits that can be traded. Demonstration project must be able to test how the carbon credit supply chain can operate under a variety of administrative and biophysical conditions that exist.

In order to produce units of carbon credits that can be traded, there are many steps that must be met, and the various steps are referred to as supply chain, and consist of:

- 1) Development of baseline
- 2) Reducing carbon emissions against *business as Usual* scenario (BAU)
- 3) Monitoring and verification of emission reductions
- 4) Calculation of units of carbon trading
- 5) Distribution of payments from market to the various parties involved in the reduction of emissions and trading carbon credits.

Because all steps in the supply chain must be realized in order to achieve an effective trading scheme REDD, demonstration projects should be designed in such a way as to be able to unify all the components at each level as to generate REDD carbon credits, needed a series of steps that would not only work at central government level (national) but also local governments (sub-national) . As a broad picture of the affected areas of deforestation and forest degradation in the period 2000-2005 can be seen in Table 5. While trends in emissions based on the functions of forests in the year 2000 until 2005 in the Province of West Papuans in Table 6.

Table 5. The area affected deforestation and forest degradation 2000-2005

Region	<i>Dry Forest Land (ha)</i>						
	Conservation	Conversion	Designated Area (APL)	Non-Forest	Production	Protection	Total
West Papua	1,846	11,012	43	1,588	10,626	1,224	26,339
West Papuan Islands	43	623	--	--	386	236	1,288
Region	<i>Peatswamp (ha)</i>						
	Conservation	Conversion	Designated Area (APL)	Non-Forest	Production	Protection	Total
West Papua	902	2,125	--	193	2,576	43	5,839
West Papuan Islands	--	773	--	--	43	--	816

Source: IFCA (2008)

REDD could also become a means to integrate the various efforts that have been and are being implemented in various settings based on patterns of forest resource conservation at every step to be taken.

Table 6. Mean and standard deviation of CO₂ emissions from deforestation and forest degradation in 2000-2005 (x 1000 tones)

Region	conservation		conversion		Designated Area (APL)		Total
	Mean	Stdev*	Mean	Stdev*	Mean	Stdev*	
West Papua	2,134	244	10.264	1.350	34	5	14.031
West Papuan Islands	33	6	1.151	117	--	--	1.307
Region	Non-Forest		Production		Protection		Total
	Mean	Stdev*	Mean	Stdev*	Mean	Stdev*	
West Papua	1,332	187	10,592	1,278	945	143	14,477
West Papuan Islands	--	--	307	49	117	30	503

Source: IFCA (2008)

2. Scale Demonstration Project

Based on the analysis of the three levels of government responsibility, Demonstration Project should be managed in four levels of potential, namely:

- 1) National (including central government-managed areas, e.g. National Parks).
- 2) Provinces (including forestry activities that involve the area include a variety of district, eg *Tahura*).
- 3) District (including forestry Activities which exist only in one area district, for example: *IUPHHK-HA, IUPHHK-HT, and palm plantations*).
- 4) Projects (such as individual forest management unit *IUPHHK-HA/HT, RST*).

On the overall rate, the new concept of FMU as described in Government Decree (PP6/2008), offering integrated administrative unit for forest management in forest areas.

3. Selection Demonstration Project

Demonstration project selection should at least represent different patterns of utilization of forest areas, covering an area of protection, natural production forests, forest plantations and palm oil plantation industry. Selection based on geographic location also should be noted, includes forests on mineral soil and peat swamps. With the potential for peat areas large enough, the province of West Papua, including the six provinces that receive priority in REDD demonstration project in addition to *NAD, Riau, Jambi, East Kalimantan and Central Kalimantan* (IFCA, 2008).

IV. ACHIEVEMENT OF READINESS IN THE *COMPLIANCE* *MARKETERA AND POST-2012*

Various recommendations on mitigation strategy of deforestation and forest degradation

Preparedness requires the ability of each country participating in generating carbon credits that can be traded by performing the steps in the supply chain REDD readiness in particular need:

- 1) The presence of baseline emissions of carbon units that can be calculated.
- 2) The existence of an independent monitoring system that is available to all project Activities and results of the calculation of emissions with a low degree of uncertainty.
- 3) The existence of intent and commitment to the steps taken to reduce deforestation and forest degradation through changes in forest management.
- 4) The presence of carbon credit calculation system for the regulation of marketing and distribution of revenue to support sustainable forest management sustainability.

Grant program aimed at achieving compliance market in 2012 as an example, is one form of multilateral and bilateral contributions by virtue of an instrument such as the *World Bank* is coordinating the *Forest Carbon Partnership Facility* (FCPF) and provides support from bilateral donors such as Australia, UK, Germany and the UN -REDD as well as many other potential sources (IFCA, 2008).

As for the real actions that can be recommended in general is the existence of climate change task force formation, as has been implemented by the Government of Papua Province, the establishment of *pilot / demonstration projects* and study of institutional, governance, financial risk through the implementation of REDD in the province of West Papua that could implemented in *pilot areas /*

demonstration projects. While specifically, a variety of strategies reducing deforestation and forest degradation can be seen in Table 7 below.

Table 7. Various Recommendations Reduction Strategy Deforestation and Forest Degradation in West Papua Province

Type Area	Strategy Recommendations
Conservation and Protection Area	<ol style="list-style-type: none"> 1. Establishment of conservation strategies at the provincial level. 2. Establishment of a professional management structure. 3. Confirmation of the legality of restrictions and compliance areas.
Forest Production	<ol style="list-style-type: none"> 1. Review the various units of production forests to accommodate the changes in forest vegetation to support the decentralization of government. <ul style="list-style-type: none"> • Review of ecological conditions in each forest unit to confirm the continuity of the original function back. • Review of open access conditions on the production forest. • Review opportunities securing land access to the local population and land use based on the pattern of cooperation such as <i>HTR</i>.
	<ol style="list-style-type: none"> 2. Reducing the flow of illegal timber into the market, through: <ul style="list-style-type: none"> • Law enforcement against illegal logging. • Creation of alternative wood supply. • Wood products sector restructuring.
	<ol style="list-style-type: none"> 3. Review of forest management practices in production units to optimize the implementation of REDD opportunities
Palm Plantation	<ol style="list-style-type: none"> 1. Consolidation policies and approval criteria for issuing permits palm plantation development. 2. Review spatial plans to minimize land degradation. 3. Intensification of production per unit of land. 4. Enabling policies without fuel (<i>zero burning policy</i>)
Peat Soil	<ol style="list-style-type: none"> 1. Settings and return water governance. 2. Fire Prevention 3. Development of coordination and consistency between government jurisdictions limit the impact of district to control the fire. 4. Peat land conversion settings further and enforcement of management regulations sites exploiting peat lands. 5. Enabling the transfer of land to alternative land use in a potentially high carbon stocks.

Reference

Built Environment Directorate General of Forestry. 2009. Strategic Data Forestry 2009. Jakarta

[IFCA] Indonesian Forest Climate Alliance. 2008. *Reducing Emissions from Deforestation and Forest Degradation in Indonesia*. Forestry Research and Development Agency, Ministry of Forestry of Republic of Indonesia (FORDA-MoF).