

CARBON MARKET FEASIBILITY ASSESSMENT: POTENTIAL FOR ESP TO ENTER THE CARBON MARKETS



MAY 5, 2008

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COMMONLY USED ACRONYMS

A/R	Afforestation/Reforestation climate change mitigation project activities
CCX	Chicago Climate Exchange
CDM	Clean Development Mechanism of the UNFCCC
CERs	Certified Emissions Reduction Units – traded in the Kyoto regulatory market
CFCs	ChloroflouroCarbons
CIFOR	Center for International Forestry Research
DNA	Designated National Authority – Ministry of Environment under the Kyoto protocol
ERUs	Emissions Reduction Units – traded in the EU ETS market
ESP	USAID’s Environmental Services Program
EU ETS	European Union Emissions Trading Scheme
FAMS	Community Watershed Forum, a participant organization of the ESP project in the Aceh Bessar District
FFI	Flora and Fauna International
FORSAKA	Community Watershed Forum, a participant organization of the ESP project in the Aceh Bessar District
GHGs	Greenhouse Gases
GOI	Government of Indonesia
JI	Joint Implementation
LULUCF	Land Use, Land Use Change and Forestry - a sector of projects in the carbon credit marketplace
MARN	Ministerio de Ambiente y Recursos Naturales
OCSP	USAID’s Orangutan Conservation Service Program
OTC	Over the Counter sale of voluntary credits – retail sales
PES	Payment for Environmental Services
REDD	Reducing Emissions from Deforestation and Forest Degradation in Developing Countries
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
VERs	Verified or Voluntary Emissions Reduction Units – traded in the voluntary market

EXECUTIVE SUMMARY

The purpose of the Carbon Market Assessment was to determine the feasibility of developing a strategy for one or more Pilot Payment for Environmental Service schemes using carbon credits as the commodity of trade. The consultancy focused on the opportunities to design projects that link to ongoing Environmental Services Program (ESP) activities and leverage the strengths of ESPs community mobilization activities throughout Indonesia.

Specifically, the Assessment explored the potential to develop carbon credit (a “carbon credit” or “credit” is one metric ton of CO₂ equivalent) projects from the Land Use, Land Use Change and Forestry (LULUCF) Sector. LULUCF projects for ESP would focus on the amount of biomass stored, or sequestered, in forests. The biomass is easily converted to carbon credits that can be either brokered or sold. The forestry credits would come from the conservation and reforestation activities undertaken by communities and community watershed forums, who are the key constituents of ESP. Broadly, the assessment looked most carefully at the possibility of entering the voluntary market with these forestry credits but also tried to understand the regulatory carbon market opportunities via the Kyoto Protocol’s Clean Development Mechanism (CDM) or the Reducing Emissions from Deforestation and Forest Degradation in developing countries (REDD) frameworks. There are numerous precedents for carbon market projects in Indonesia, and there are operational projects in the country – that can serve as potential models.

Whether USAID is interested in: 1) coordinating with the REDD Ulu Masen Ecosystem Project in Aceh Province, or 2) developing a Bundled Afforestation/Reforestation and REDD Carbon Credit Pilot Project within ESP, or 3) facilitating a Pilot REDD Carbon Credit Project with the Orangutan Conservation Services Program (OCSP) as a smaller and more easily controlled activity, it will be taking an important step towards integrating climate change mitigation into its programming.

Based upon the findings presented in this report, the Team believes that coordinating with the Ulu Masen Ecosystem Project is unlikely to be a satisfactory activity for the ESP project. This determination stems from the belief that institutionally, the implementing entities of the Ulu Masen Ecosystem Project are currently not looking for assistance from outside entities, and view these offers as potential competition. The very high profile public relations that this project has undertaken, and its direct links to the Governor of Papua, make it likely that they will receive the assistance necessary to achieve part of the implementation of goals for their project. To that end, USAID should be encouraged to invest in other activities where it will obtain greater value and be able to generate positive results during the timeframe of the ESP project and mitigate any potential downsides from association.

A Bundled Afforestation/Reforestation and REDD Pilot Project with the ESP community forums is more likely to be a satisfactory ESP Pilot Project. This is true for a number of reasons: it would be possible to manage the process, to determine the appropriate scale of events, to enter into the agreements with all parties at the beginning, as well as to assure the transparency of the process. Additionally, the great strength of the ESP project is the community mobilization work, by using the forums to advance a forest PES in addition to protecting their water supplies it provides the opportunity to dovetail benefits for Indonesia’s communities. If it can be done without diluting or confusing the importance of the watershed protection message, the addition of carbon forestry will add great financial

value to the work of the numerous community watershed forums. An additional benefit of the bundled Afforestation/Reforestation & REDD Pilot Project is the coordination with the District Governments that have well established land ownership regimes that are not linked to the national government. The intimate association with District Government reduces a number of the fundamental questions about Indonesian LULUCF carbon credits.

Lastly, given broad license by ESP to look at the options, the Carbon Market Feasibility Team also explored possibilities with the OCSP project. A REDD activity that linked to orangutan habitat surrounded by logging concessions, oil palm conversion lands and mining concessions could be an attractive way to compensate concessionaires for conservation instead of extraction.

Of the three options, it is the opinion of the Team that working with the existing ESP forums on a bundled Afforestation/Reforestation and REDD Pilot Project has the greatest potential to be a satisfactory pilot activity for ESP project support. The timeline that remains for the ESP project make it a close judgment as to whether there could be actual sales of carbon credits prior to the end of the ESP project. Depending upon the sophistication of the FORSAKA and FAMS forums, the ESP Pilot Project could be selling credits to the market – or presenting credits to a broker by that point, or at least be well on its way. There are a number of advantages to working on the ESP Pilot Project: the beneficiaries are motivated, have clear title to their lands, are used to working the land and have the capacity to do so, and are likely to be technically capable. In the expert opinion of the Team, there is a better than average chance for this project to achieve carbon credit sales prior to project close out, if it is fully supported from the beginning.

I. INTRODUCTION

The purpose of the Carbon Market Assessment was to determine the feasibility of developing a strategy for one or more Pilot Payment for Environmental Service schemes using carbon credits as the commodity of trade. The consultancy focused on the opportunities to design projects that link to ongoing Environmental Services Program (ESP) activities and leverage the strengths of ESPs community mobilization activities throughout Indonesia.

Specifically, the Assessment explored the potential to develop carbon credit (a “carbon credit” or “credit” is one metric ton of CO₂ equivalent) projects from the Land Use, Land Use Change and Forestry (LULUCF) Sector. LULUCF projects for ESP would focus on the amount of biomass stored, or sequestered, in forests. The biomass is easily converted to carbon credits that can be either brokered or sold. The forestry credits would come from the conservation and reforestation activities undertaken by communities and community forums, key constituents of ESP. Broadly, the assessment looked most carefully at the possibility of entering the voluntary market with these forestry credits but also tried to understand the regulatory carbon market opportunities via the CDM or the Reducing Emissions from Deforestation and Degradation (REDD) frameworks.

Indonesia currently has a number of projects registered within the framework formally used by the Clean Development Mechanism (CDM) of the United Nation’s Framework Convention on Climate Change, although they are not in the LULUCF sector. Forest-based carbon market projects have been established in the region, with operational examples for the regulatory market in China and for the voluntary market in Indonesia, Thailand, China, and India. The most promising project that overlaps with ESP is a new project in Aceh Province’s “Ulu Masen Ecosystem Project”. This REDD project is currently in the initial stages of implementation. It has been designed and had its baseline assumptions and biomass projection audit certified, and is now planning to begin operational work on the ground. This program has not yet resulted in sales, but has signed agreements with carbon credit purchasers to sell if preliminary conditions are met.

As part of the Feasibility Study, the team met with potentially relevant people and institutions to develop a strategy for the sale of carbon credits. These included meetings with: the Ministry of the Forestry – REDD focal point, the Ministry of Environment – head of Protected Areas, the National Planning agency (BAPENAS), CIFOR, Flora & Fauna International (FFI), ESP technicians and community organizers, the Orangutan Conservation Service Program (OCSP), the World Bank Environment Officer, the Leuser Foundation, as well as all of the principal project proponents of the Ulu Masen voluntary market carbon project – The Governor of Aceh Province, the District Head of Aceh Bessar, Carbon Conservation and FFI. Annex A has a full list of meetings.

A field visit was also conducted to the FAMS and FORSAKA Community Watershed Forums, which are participant organizations of the ESP project in the Aceh Bessar District. A list of meetings and activities is included in Annex A.

This report contains an assessment of carbon trading options, and their potential, in Indonesia to directly source carbon credits to the voluntary and/or regulatory carbon markets. Specific emphasis has been placed on the potential sale of credits from activities in the LULUCF sector – specifically either Afforestation/Reforestation (A/R) or REDD initiatives. This report contains recommendations for the potential development of three

carbon-based Payment for Environmental Services schemes, one of which is providing project support to the existing Ulu Masen Ecosystem carbon market project.

2. CLIMATE CHANGE AND THE CARBON MARKET

As the scientific evidence regarding climate change has become certain, the effort to address this global problem has picked up both urgency and pace. After one of the most complicated and inclusive participatory processes in diplomatic history, the world's countries have taken the policy position that it is their role to facilitate and promote a reduction in Greenhouse Gases from their territory. They have also agreed to sanctions for those countries, and the particular sectors of their economies, that do not perform as required under their promised agreements. While the Kyoto Protocol has not been ratified by all the signing countries, it has become a benchmark for what future agreements could look like. Negotiations continue on numerous points of policy, but the consensus agreement is that now is the time to act to reduce the impacts of climate change. That means that the world is looking for a Payment for Environmental Service (PES) program that covers the planet in the form of market-based solutions related to trading carbon credits, as well as potentially using "fund" approaches in addition to markets, especially for REDD activities.

The market-based solution, that we are interested in for ESP, was modeled upon other large scale problems that were addressed in a "pollution trading" scheme – namely the Montreal Protocol that was designed to curb global emissions of Chloroflourocarbons (CFCs) into the ozone layer, the Clean Air Act in the USA that led to a significant reduction in acid rain, at a regional scale, and created pollution trading in Sulfur and Nitrogen derivatives (SOX, NOX), and finally the Los Angeles County smog marketplace to locally address the emissions of pollutants amongst businesses in the county. These markets had demonstrated that there was some benefit to allowing the private sector to adapt to the requirements of emissions caps by providing flexibility to their response.

The impact of all of this for Indonesia is that there is an opportunity for it to play a role in mitigating the GHG emissions that developed countries can not reduce within their borders.¹ In Indonesia, the tropical climate provides a competitive advantage for growing forests which can sequester carbon and keep CO₂ out of the atmosphere. If Indonesia is able to enter into the regulatory Carbon marketplace, it will likely do so under the CDM of the Kyoto Protocol in any number of sectors but likely not LULUCF. Indonesia could also generate credits for the voluntary market – most likely in the Land Use, Land Use Change and Forestry sector. Many factors favor the possibility of generating Carbon credits in the LULUCF sector. These factors typically relate to the ideal forest growing conditions in most of Indonesia, the rainfall, deep volcanic soils, high growth rates, and average temperature. Additionally, Indonesia is rich in peat forest. In short, it is a good place for forests to grow rapidly, in comparison to other regions of the globe. Given the relatively important

¹ Countries listed in Annex I of the UNFCCC, most developed countries, have taken binding promises in the Kyoto Protocol to reduce their emissions of GHGs relative to their baseline emissions from 1990. They are required to undertake the majority of their emissions reductions within their national borders, but they can use the Joint Implementation or Clean Development Mechanisms to offset their emissions in another country.

emissions associated with forest fires and deforestation in the country², there is great enthusiasm internationally to find an opportunity to enter the carbon credit marketplace, and reduce deforestation and forest degradation while striving to protect the remaining forest cover.

3. THE CARBON MARKETS

Carbon credit emissions trading market mechanisms currently exist for carbon projects that are designed for both the regulatory and voluntary markets. There are several types of market mechanisms and each have a different role to play. Regulatory mechanisms are used by entities to meet their legally-binding regulated carbon emissions allowances. These include all entities in Annex I countries of the UNFCCC that have ratified the Kyoto Protocol, companies in the European Union Trading System, or entities in a growing number of local and regional markets. Voluntary mechanisms operate for use by entities that are not legally regulated. This includes some carbon market instruments that are legally binding, even though they are voluntary. This includes all individual purchases to offset personal carbon footprints, companies that retire credits for strategic or personnel satisfaction reasons, and/or credits purchased as gifts or donations. The rules and regulations required for carbon credits to be registered differ markedly between the various regulatory and voluntary registries. As a consequence, different mechanisms are better suited to certain activities or project locations.

What are the markets for Carbon Credit projects?

Regulatory Carbon Market Mechanisms

Clean Development Mechanism

The CDM is a project based mechanism in which the host parties do not have an emission cap or emissions reduction target. The CDM, detailed under Article 12 of the Protocol, states that “The purpose of the clean development mechanism shall be to assist...[non-Annex I Parties]...in achieving sustainable development and ... to assist ... [Annex I Parties] in achieving compliance with their quantified ... commitments ...”. Industrialized countries can acquire carbon credits by financing carbon reduction projects in developing countries. Carbon credits produced by registered and approved CDM projects are called Certified Emission Reductions (CERs). The CDM, as its name implies, is supposed to stimulate clean development for the populations of non-Annex I countries. There are 15 categories of eligible CDM project activities. They include energy industries, manufacturing, transportation, waste handling and disposal, agriculture, and afforestation and reforestation. Afforestation and Reforestation (A/R) is the only land use activity eligible under the current phase of the CDM.

Joint Implementation

The JI is also a project mechanism and allows carbon credits to be purchased by emitters in one Annex I country from projects implemented in another Annex I country or a country with an economy in transition. Emissions from JI projects are called Emission Reduction Units (ERUs). The JI is not applicable for Indonesia because it is not listed under Annex I of the UNFCCC.

² GHG emissions associated with deforestation and wildfires account for roughly 20% of all emissions globally, on an annual time scale.

Emissions trading and European Union's European Trading Scheme (EU ETS)

The mechanism in the Kyoto Protocol allowing for Annex I parties to trade carbon credits resulted in the EU European Trading Scheme. The EU ETS began in January 2005 as the first international trading system for CO₂e emissions (CO₂ equivalent). Over 11,500 installations are covered within ETS, representing almost half of Europe's GHG emissions. Participating companies can buy or sell emission allowances, allowing targets to be achieved at least cost. Credits traded within the system are called European Union Allowances (EUAs). Currently LULUCF projects are excluded from being traded in the ETS.

The United States

The United States did not ratify the Kyoto Protocol and the federal government does not regulate CO₂ or other Kyoto GHGs. However, a large number of bills have been submitted to the US congress addressing climate change and may result in the creation of a federal regulatory system in the future. Additionally, many US states have initiated regulatory processes alone or in coordination with other states including the California Climate Action Program, the Oregon Standard, the Regional Greenhouse Gas Initiative (RGGI) by northeastern states, and the Western Regional Climate Action Initiative (WRCAL) by western states and two Canadian provinces. The 'Climate Registry' was recently created to form a common GHG emissions reporting system. Over the last year thirty-nine US states, three Native American tribes, four Canadian provinces, and two Mexican states have signed on to this 'Climate Registry' and because of its popularity it is expected to serve a dominant role in future regulatory or voluntary cap-and-trade systems.

The New South Wales Greenhouse Gas Abatement Scheme (NSW GGAS)

This is an Australian state-level mandatory program launched in 2003 that establishes statewide annual emission reduction targets and then requires electricity retailers to meet bench-marks. If a retailer cannot meet its target, it can pay a fee per ton or purchase offsets created from emissions abatement projects within the state of New South Wales. Credits such as ERUs or CERs are not accepted nor are any offsets created outside of New South Wales; therefore this scheme is not applicable to Indonesia.

Voluntary Carbon Market Mechanisms

The voluntary market is composed of carbon offsets that are not required under regulation. These can come in many forms including: the retail purchasing or trading of carbon credits by companies or individuals to offset their GHG emissions, the purchasing of offsets directly from a project development for retirement or resale, and donations by companies to offset projects in exchange for credits. The voluntary market currently can be grouped into two types: legally binding cap-and-trade markets, such as the Chicago Climate Exchange and non-binding markets often called the 'over the counter' (OTC) voluntary offset market.

Chicago Climate Exchange (CCX)

Launched in 2003, the CCX is currently the dominant North American GHG trading system. It is a voluntary but legally-binding system. When members voluntarily join the system as 'full members' they must legally commit to reduce GHG emissions. Six types of GHGs are traded as a standard carbon commodity: the Carbon Financial Instrument (CFI) which is equivalent to 100 t CO₂e. The CCX has developed standardized rules for issuing CFIs for different project types. The Land Use project types allowed are: agricultural and rangeland soil carbon management, and forestation and forest enrichment, urban tree planting, and, in specified regions, combined forestation and forest conservation projects. Projects can sell offsets directly on CCX by becoming a participant member, or if the project involves less than 10,000 metric of CO₂ equivalent per year, the offsets can be registered and sold through a registered Offset Aggregator.

The OTC Voluntary Market

In this market, offsets generated are project-based. Credits produced in this market are termed Verified or Voluntary Emissions Reductions (VERs). Buyers in this market are not driven by regulation but instead by various reasons such as: public relations, philanthropy, desire to reduce carbon impacts, the desire to prepare for expected future regulations, or for re-sale. Sellers of VERs generally represent projects that believe they will experience greater benefits by selling credits in the voluntary market, or for some reason do not meet the regulations required in the CDM or JI.³

Current Status of Existing Markets

The regulatory emissions offset market has grown very rapidly over the last several years. The World Bank⁴ estimated that the regulatory market alone grew to be three times larger in 2006 than in 2005, to over US\$30 billion. Sales of allowances in the EU ETS reached almost US\$25 billion and thus dominated the market. Project-based transactions such as CDM and JI almost doubled in size and supplied almost 450 Mt CO₂e with a market value of over US\$5 billion in 2006. With 86% of the volumes transacted, European buyers dominated the CDM market. Despite the large size of this market, the Land Use sector has remained one of the smallest sectors in the CDM with only 1% of all CDM volumes originating from LULUCF projects worldwide.

While the voluntary market is much smaller than the regulatory market, in 2006 the voluntary market reached a value of US\$91 million with about 40% of that market under the CCX⁵. The distribution of project activity and project type in the over-the-counter market (OTC) differs markedly from the CDM market. The recent Ecosystem Marketplace report on voluntary markets found that according to surveys conducted, forestry type projects accounted for 36% of the volumes transacted with about 8% of those originating from Asian projects, predominantly from India and China. The Ecosystem Marketplace survey found that prices of VERs differed by project type, location, and whether the seller was the project developer or a wholesaler-aggregator (Table I) with the average price from the developer being US\$3.88/t CO₂e.

Table I: OTC VER Prices by Project Type
from: State of the Voluntary Markets 2007

Project Type Price Range	(US\$/tCO₂e)
Afforestation/ reforestation monoculture	10 – 13
Afforestation/ reforestation mixed native	0.5 – 45
Avoided deforestation	10 – 18
Methane- Livestock	6
Methane- Landfill	0.75 – 26
Methane- Coal mines	20
Industrial gas	4
Direct Fossil Fuel reduction	0.5 – 20
Off- Grid Renewable	5 – 18
RECs	0.75 – 20
Mixed	7 – 10

³ Hamilton et. al. 2007.

⁴ The World Bank, State and Trends of the Carbon Markets 2007.
http://carbonfinance.org/docs/Carbon_Trends_2007- FINAL - May_2.pdf

⁵ Hamilton et. al. 2007.

Standards for Carbon Credits

For credits to be verified and sold under the CDM, certain regulations and standards must be met. Guidance on these standards can be found at the CDM website⁶ or the Guidebook on CDM project formulation. In the voluntary market, one set of standards does not exist for the entire market. However, several organizations have created various guidelines and standards. The formation of such standards creates confidence in the market and helps to ensure that credits are real, measurable, and additional.

The major standards include California Climate Action Registry's Protocols, CCX, Climate Community and Biodiversity Alliance Standards (CCBA), The Gold Standard (which does not include LULUCF project activities), ISO 14064, Plan Vivo, Soil Carbon, Voluntary Emissions Reduction plus (VER+), and the Voluntary Carbon Standard (VCS). According to the recent Ecosystem Marketplace report on the voluntary carbon market, 38% of respondents of sellers in a survey felt the VCS most appropriate for their future needs, however at this time it is unknown which standards will come into dominant use. The majority of these standards require a third party to verify the project and credits issued.

Registries for Carbon Credits

Another component necessary for transparent trading is registries. Registries create an inventory of credit creation and ownership and prevent credits being sold to multiple buyers. Most registries keep track of both credits verified in a given year by a project and credit transactions. Many registries have formed over the last several years and it is unknown if one or more will come to dominate the market. The major registries for the voluntary market include the Chicago Climate Exchange, California Climate Action Registry, the US Department of Energy 1605(b) Voluntary GHG Reporting registry, Environmental Resources Trust (ERT) GHG Registry, Triodos Climate Clearing house, and the Bank of New York Global Registry. Different registries may require third party credit certification under a specific standard(s) or may provide its own third party validation and verification services.

Future climate negotiations

The carbon credit project market is growing rapidly. The first phase of the Kyoto Protocol is underway with approximately 450 million metric tons traded from projects in developing countries in 2006 and a market that has grown almost exponentially over the past six years. During the 2007 conference of the parties a framework for future negotiations was established to create an agreement that would replace the Kyoto protocol as of 2012. Binding commitments to reduce greenhouse gas emissions were not yet determined, however, developed countries promised to take the lead in these reductions. It is likely that projects in developing countries and particularly land-use projects will have a significant role to play in the future market post 2012. The size of small-scale forestry projects was increased, allowing for more projects to be eligible to take advantage of the more simplistic small scale project regulations.

An important facet of current negotiations are the discussions on REDD that came out of the Bali meetings in January 2008. Deforestation and degradation are responsible for as much as a fifth of all emissions and the emissions are predominantly located in the developing countries. An international program to confront deforestation and degradation can therefore simultaneously benefit mitigation against climate change and supporting development in local communities. International governments are currently discussing national level programs to reduce deforestation and degradation and to receive financial

⁶ <http://www.cdmrulebook.org/Pageld/1>

benefit from developed nations for doing so. This potential window is particularly applicable to the remaining forested areas in Indonesia, that are facing increasing pressure and threat of deforestation, especially as the certainty of land tenure for most of these forests is not secure.

4. ESP REGULATORY MARKET CARBON CREDIT OPTIONS

The most compelling options for entry into the regulatory carbon market for ESP participants would be through the CDM window of the Kyoto Protocol. These would be specifically for avoided or reduced emissions from the adoption of new agricultural practices and forestry.

1. Avoided emissions from the adoption of new agricultural practices:
 - Improved rice-water management to reduce methane emissions,
 - Oil palm processes,
 - Co-generation of energy from the burning of rice hull waste.
2. Carbon sequestration and avoided emissions from forestry practices:
 - Afforestation/Reforestation CDM activities,
 - REDD methodology.

With respect to new agricultural practices, there is a need for a program that will be able to quantify the amount of methane emitted during rice production. Methane emissions from irrigated rice production are a major sector of emissions in Southeast Asia. Improved management can cut emissions by 50%/ha, save 40% on water quantity use, and combined with Integrated Pest Management techniques and residue management, significantly reduce fertilizer and pesticide use, resulting in improved water quantity and quality for downstream human populations and biodiversity.

Another intriguing option is to avoid direct emissions of carbon released during the burning of the rice hulls after harvest. In addition to the quantification of the avoided emissions from not burning the rice hulls, a producer could capture those emissions in a biomass powered turbine, or a cogeneration facility that uses the biomass waste, after processing it for rice, to generate electricity on a small scale. CDM projects of this type are currently being implemented with sugar cane waste in both Brazil and India, and potentially in other countries as well.

In looking at the forestry sector, the ESP project is actively involved with the planting of trees and the reforestation of critical watershed areas that are sensitive to water supply. Additionally, the project is actively involved in Indonesia's protected areas. Through the reforestation work, if properly designed, the project could conceivably generate credits. This is complicated by the spatial array of plantings, and would be most applicable for areas where a few landholders hold extensive terrain. Of particular importance is to clarify the land tenure and carbon credit tenure questions. In the Indonesian context, this most likely

means working with government entities, or concession holders– which implies working with either the timber or mining producers.

The window to work through the REDD process is attractive as it would provide a financial incentive to protect the remaining fragments of forested lands, as a pure PES. In Indonesia, the remaining standing forests are vast but under extreme pressure from deforestation. Even with that factor, it is difficult to make the business case, as transaction costs to enter the regulatory market are high and there is uncertainty about land tenure for most of Indonesia's publicly held forest estate.

It is not unusual for projects undertaken for the regulatory market to take many years to attain registration. In the case of land use and forestry projects, only one project has attained registration under the CDM in the decade since the Kyoto Protocol was signed. This timeframe makes this beyond the scope of the project. With the REDD activity, the rules and methodologies for these projects have not yet been agreed upon, so there is something of a moving target. Given the long time requirements for registration, the incredible complexity, high transaction costs of designing, implementing, and registering CDM projects it is not a recommended strategy for the ESP project to pursue regulatory market carbon credit options.

5. ESP VOLUNTARY MARKET CARBON CREDIT OPTIONS

The most compelling options for entry into the voluntary carbon market for ESP participants would be to harness the interest and capability in the following activities:

3. REDD in the Ulu Masen Ecosystem Project in Aceh Province.
4. A bundled Afforestation/Reforestation & REDD Pilot Project. This would be in the watershed supply zones under ESP Community Forum management and coordinated with the District Governments that have well established land ownership regimes that are not linked to the national government.
5. Lastly, given broad license by ESP to look at the options, the Carbon Market Feasibility Team also explored possibilities with the OCSP project. A REDD activity that linked to orangutan habitat surrounded by logging concessions, oil palm conversion lands and mining concessions could be an attractive way to compensate concessionaires for conservation instead of extraction.

As with the previous regulatory market discussion, the same ESP forestry activities, tree planting, reforestation and REDD activities in protected areas, could be designed and implemented in such a manner that they generate credits for the voluntary market.

Over the three-year period of ESP implementation to date, more than 41,000 hectares were planted in tree plantations and agroforestry systems. These plantations principally consist of native species of teak, sentan, and moroti, and were planted in sensitive and degraded areas within the watersheds. 13,092 has of degraded land was planted in 2007. These trees could be packaged as an OTC voluntary market product principally targeting individuals, or those not interested in wholesale purchasing.

6. POLICY, LEGISLATIVE & REGULATORY FRAMEWORK

As carbon credit markets are relatively new, there is an incomplete framework at the policy, legislative and regulatory levels in Indonesia. This is true in most of the countries of the world. There is a designated national authority, at the Ministerial level, that handles climate change issues related to CDM and the regulatory market. This office is typically charged with determining if climate change projects are in agreement with the national policies and goals, and that they comply with local and national laws. There is also a REDD focal point in the Ministry of Forests, which is in the process of developing a REDD policy.

As the Ministry of Forestry develops their policy regarding climate change and REDD, ESP should encourage, or suggest a few items that could be helpful in clarifying the situation for carbon market projects.

- Include specific policy considerations for REDD projects that sell to either or both the regulatory and voluntary markets.
- Clarify the criteria used to determine if a carbon market project satisfies their expectations for “contributing to the sustainable development of the communities”.
- Determine the legal status of a carbon credit. Who owns it? Does it belong to the land, to the landowner, or to the nation?
- Clarify the situation with the sale of credits from lands that do not have clean title, whether they are private or public lands. For example: part of the national forest estate, but locally considered a protection forest.
- When thinking about REDD from protected areas, look at the co-management agreement with the NGO/Civil Society partner for each particular area to make sure that the implementer can recover costs from the sale of carbon to offset investments in capacity building and hiring of personnel to monitor and certify the carbon in the forest.
- Assist in the design of, or improvement of, a model for co-management contracts that specifically focuses on the issues surrounding carbon credits.
- Generate a new independent fund, separate from the state, managed by another entity for the sale and recuperation of revenue from Carbon Credit costs.

An analysis of the legal framework leaves the impression that there is enough legal structure present to productively engage in the development of carbon credit projects. In the particular case of the LULUCF sector, however, there is a particularly important gap in the land tenure scenario that needs strict attention. The land tenure question basically comes down to the need for all LULUCF projects to take place on lands where there is clarity on who owns the land, who owns the carbon credits and who has the rights to sell the carbon credits from the project. The land ownership scenario in Indonesia is complicated, due to the fact that a significant amount of land is legally owned by the national government, but used by local actors or ‘zoned’ for land use that is done by the provincial, district or municipal governments. The actual ownership is not clear, as the 5 year spatial planning process determines how lands are moved from one land use to another: from production forest to conversion forest or to oil palm plantations. This uncertainty combined with a very

slow response from the Ministry of Forestry about carbon credit projects on national lands makes working in places with Special Autonomy attractive.

The Provinces of Aceh and Papua have been granted varying degrees of Special Autonomy in recent years. This Special Autonomy gives these provinces additional rights and responsibilities with respect to land use decision and natural resources management.

Currently, the governors of Aceh and Papua have communicated visions of using Special Autonomy as a base for integrated forest conservation and pro-poor development. These governors' announcements at COP 13 in Bali and future planned actions demonstrate a desire to find PES activities to replace illegal logging in those provinces.

Other lands that have been identified that stand up to the scrutiny required by carbon credit projects include:

- Concessions – plantation, production forest, oil palm, mining, etc. They have exclusive control over the lands and the carbon and can make binding promises about land use on their concessions over a specific period of time.
- Lands under District Government control - leases can be granted directly from the district level, as an example, the district head of Aceh Bessar mentioned his interest in this model.
- Private Lands.

A second issue of particular concern is the absence of regulations concerning the management of funds generated from the sale of carbon credits, specifically from public lands. This is a likely scenario from any project activity on lands controlled by the provincial or district government, or protected area.

7. INSTITUTIONAL CAPACITY

The Team met with a number of people and institutions during their time in Indonesia (see Annex A). Of all of the institutions and people, only three entities were actively involved in some aspect of a carbon credit generating activity: The Ministry of Environment, the Ulu Masen Ecosystem project, and EcoSecurities. The Ministry of Environment is the DNA, or regulating agency, for all carbon credit projects, so it is required that they be involved in approving all CDM activities in Indonesia. The Ulu Masen Ecosystem Project is promulgated by the Governor of Aceh Province, was designed by Carbon Conservation from Australia/UK, and the local implementing partner is Flora and Fauna International. Lastly, EcoSecurities is a full service, private-sector, climate change consulting company with significant experience across the globe.

At the governmental levels there is no capacity to implement a carbon market project. Fortunately, these projects will likely be implemented either by private parties or in a public-private partnership. The Ulu Masen project is the single most active LULUCF carbon project in the Indonesian Climate Change market space. The project is actively generating significant press (see Annex B) and has signed purchase agreements with Merrill Lynch Bank for US\$8M with a US\$1M option purchase for future streams of credits as well. The main technical member of the Ulu Masen team is Carbon Conservation, who worked with the Provincial Government in Aceh to design an interesting REDD project. Unfortunately, the project has been developed at the very high levels of policymakers and LULUCF technical specialists. The project does not have a sufficient on the ground presence to implement the

activities described in the project design. So while Carbon Conservation is using the Ulu Masen program to position themselves to be a huge power broker in the REDD voluntary carbon credit marketplace, there are significant concerns with having ESP directly associate with this activity.

In order for the ESP project to implement a pilot carbon credit PES, there are a number of different capacity building efforts that should be undertaken. Not all of the following are required for every carbon credit project, but they represent the overall context – which is one where previous experience is scarce and capacity is limited. Important institutional capacity building should include:

- Develop the capacity, which currently does not exist anywhere in Indonesia, to monitor carbon stocks in biomass (whether different forest types – broadleaf, mangrove, wetland, etc.) and certify credits for the voluntary market.
- Develop an Environmental Services Registry within the Ministry of Environment or Forests. A simple database listing what environmental service was created, by what activity/project, and then the database assigns a specific serial number for those services marketed from activities within the country. Or add the serial number to already marked credits (perhaps with GPS coordinates and a vintage year). Alternatively, the GOI could require that all credits generated in the country be registered on an existing registry prior to sale or brokerage.
- Promote the establishment of a separate entity to market environmental services from the country, or develop a relationship with reputable private sector entities.
- Develop the capacity of local NGOs, or Civil Society Organizations, to co-manage protected areas to work with carbon measuring, accounting, reporting for ongoing certification/validation of previously sold credits – whether through REDD or voluntary market programs.
- Create an Environmental Services National Fund, with the fiduciary responsibility to sustainably divide the benefits from the sale of ecosystem services to the interested parties – people changing their behavior.

8. ESPs PREFERRED CARBON MARKET OPTIONS

a) Coordinating with the Ulu Masen Ecosystem Project (Ulu Masen Project)

Given the preference for working in provinces benefiting from Special Autonomy and ESPs presence in Aceh, it makes sense that ESP should look first to Aceh to try to develop a pilot Carbon credit activity. There already is an existing Carbon market effort in Aceh Province, and it might make sense for ESP to try to coordinate its activities to support this ongoing activity. There are many benefits to taking this course of action. The Ulu Masen Project is sophisticated at both the policy and technical levels. The project design & baseline have been certified by the Climate, Community and Biodiversity Alliance. The project design is at a scale that absorbs the high transaction costs into a functional business model. The project theoretically includes 750,000 ha for a period of 30 years and is projected to generate 100M tons of CO₂e. The project has intimate and formal government support, with the Governor of Aceh acting as a personal ambassador promoting the project. It is part of the

greater *Aceh Green* strategy, being promoted by the new Provincial Governor. The Ulu Masen Project has attracted the promise of investment from Merrill Lynch \$9M, and has other financial entities like Macquarie Capital doing due diligence. Finally, the Ulu Masen Project's main implementation partner, FFI, is one of ESPs current partners in Aceh.

There are indeed a number of ways that ESP can assist the Ulu Masen Project. In fact, when the promoters of the Ulu Masen Project recently brought financial investors to look at the project they took them to the FORSAKA Community Forum, which was mobilized and organized by the ESP project. Their on the ground partner, FFI, is a participant in the FORSAKA Forum, but their input has been minimal. If the FORSAKA Forum is a model of the community organizations that the Ulu Masen Project is interested in working with, or creating, there is a significant need for more community mobilizing akin to the ESP process. There is almost no capacity in Aceh to mobilize communities around the environment outside of the ESP experience. ESP and FFI should collaborate in adapting their approach to effectively mobilize communities in support of this.

This observation, that the Ulu Masen Project brought their potential investors to look at an ESP Form, alludes to a number of serious questions about the capacity for implementation. While the project, to this point, is well designed, well marketed, baseline certified, and has closed the initial carbon credit sale; it is not at all clear if it can actually be implemented.

The Ulu Masen Project has not publicly addressed:

- The many and critically important land tenure questions;
- The benefit distribution questions – related to the how much, who, what, where and when of the financial flow;
- The agreements between the project proponents. There is a non-transparent process with the project proponents stipulating what their agreements are; and
- The field level activities with communities, over 750,000has, have not been described or defined other than in general terms.
- The transparency of the actual US\$9M sale to Merrill Lynch. Who is the agreement between, it is not publicly stated, and when asked, all parties claimed confidentiality. Rumor stipulates the deal is between Carbon Conservation directly with Merrill Lynch. If the communities doing the work haven't yet been trained, much less identified, it seems prudent to transparently announce how the financial flow and distributions will function during implementation.

If the Ulu Masen Ecosystem Project is a voluntary market REDD activity, and the questions about it can be satisfactorily answered, and they want USAID help, then that is the clear preferred alternative as they are already well along the path of commercializing carbon credits. If the project is viable in the field, and USAID determines the risks to be slight, ESP should complement the implementation of the Ulu Masen Project. ESP could work with its current partner, FFI, to ramp up to scale a process to mobilize communities with a focus on carbon as part of their ongoing forest restoration and conservation activities that are currently centered around water resources.

b) Pilot Afforestation/Reforestation & REDD Carbon Credit Project (ESP Pilot Project)

Should ESP decide to pilot its own carbon market project, there are numerous options available. It makes sense to continue to work in the project areas where ESP is better assured of control of land tenure, without interference from the national level, which means

either the Provinces of Aceh or Papua. It also makes sense for ESP to continue to work on a carbon-based PES that is directly linked to the ongoing work related to the protection and rehabilitation of forests around water supply springs and rivers. ESP has developed intimate contact with the communities where it has organized Forums in Aceh. The regional ESP office in Aceh also has the capacity to scale up its community mobilization meaning that any ESP promoted Pilot Carbon Market Project (Pilot Project) can be assured of having the capacity to actually be implemented on the ground.

In the meetings with people, institutions, government and communities it was clear that there is significant interest, in Aceh – and especially in Aceh Bessar, amongst project stakeholders and area landowners to participate in a carbon credit project. ESP could facilitate a Pilot Project that would be small enough that project participants could properly manage it, and it would enable all participants to learn from their experience. This Pilot Project should bundle the needs and desires of the communities with the goals of the District Government of Aceh Bessar, where the concept was well received by both the District Head, and the head of the District Forestry Office. As the landowner, the District Government is interested in including both Afforestation- Reforestation on the lands that the Community Forums are planting, and REDD activities on forested District lands that are under threat of deforestation. The proposal to bundle carbon credits from the two types of forestry activities is relatively new, and would provide for a more integrated approach for fitting a carbon PES into the actual activities and needs on the ground in Aceh Bessar.

If ESP were to promote a Pilot Project, it should take full use of its competitive advantages and recognize its limitations.

- ESP is not a permanent entity in Aceh, it is not a land owner, and it is not a carbon asset owner.
- The project has a short-term presence with the communities and is not able to make promises regarding land use.
- Community action is required for carbon market projects to succeed in reforestation, conservation and protection. In Aceh, that capacity is weak and outside of ESP, the organizing capacity is almost absent.
- ESP does provide an essential “missing link” for carbon projects – a scalable capacity to organize communities around environmental awareness and provide training for the essential tasks of reforesting, protecting and monitoring the areas included in the Pilot Project.

The ESP Pilot Project, as described above, would bundle carbon credits from both Afforestation/Reforestation and REDD activities. It would be implemented by communities and Forums in coordination with the District Government of Aceh Bessar as partners. The ESP project would play a facilitative role, train and mobilize communities to achieve the goals of the ESP Pilot Project, but would not have a vested ‘stake’ in the Pilot Project. Initially, ESP should start with the two forum groups, FAMS (Tahura PA) and FORSAKA (Chagar Alam Jantho). FAMS has 2 communities and 602 has. FORSAKA has 6 communities and 1,500 has. Both Forums are situated in areas that have large forested buffer zones that surround the ‘water protection forests’ the Forums are planting and rehabilitating. The District Head has control over much of these forested buffer zones, and is worried about illegal logging and deforestation pressures. He has mentioned that only community policing can protect them, and that a carbon based PES would likely provide the necessary incentive to functionally protect these forests. The District Head mentioned that the buffer areas around the two Forums mentioned above represented something in the range of 15,000has-25,000has. At

this scale, the Pilot Project would be able to recover initial investments in training and materials, recover transaction costs for certification/ verification/brokerage fees and pay for operations and maintenance. It is likely that after costs, the Pilot Project would still be able to provide a meaningful return to the communities and the District Government.

The question “How does the money get distributed?” came up repeatedly from the communities that were visited during the field component of the Assessment. These communities were informed of the possibility of a carbon credit based PES, as they participated in a training under ESP where this was discussed only a few weeks prior. Their familiarity with PES and their water supplies made it easier for them to internalize the carbon market concept. A well designed distribution mechanisms for the benefits from the sale of carbon credits should be clear to all parties and be negotiated amongst all parties at the beginning of the project. ESP should strive to facilitate a process that models:

- Transparency in measurement of the assets – carbon accounting, monitoring, conversion of biomass measurements into credits. This assures that everybody knows how many credits there are for sale.
- Transparency in the distribution of benefits. Everybody knows what price the credits sell for and how it is distributed. Land owners typically own the carbon, communities do the conservation and /protection work, seller or broker takes a commission.
- Clarity on the timing of the release of benefits, according to a payment schedule, and who is able to access the funds.

An example distribution mechanism that ESP might consider would include the following elements:

- All project participants would know how many credits they can sell from the various activities: reforestation and REDD activities across communities and landscapes.
- All project participants would be informed of what purchase agreements have been made, what volume was purchased, by whom, and at what price.
- All project participants would be informed about all the costs are associated with the transaction and what the net return will be.

Once transparency at that level has been established, everyone should be in agreement about how much money there is actually to distribute. At this point, discussions about the distribution of benefits are sure to arise, and should. Once transaction and operations and maintenance costs have been recovered, and the brokerage fee has been paid, ESP might consider promoting a system to distribute the net return according to a relative split. Again, this is an example, but given that the communities are doing the reforestation and conservation work on the ground, they might receive 70% of the benefits. That is considered the bulk of the payment, to bring about a change in behavior in natural resources management. The remainder of the revenue could be distributed amongst the various government entities that actually own the land, or have a say in forestry and forest management. Perhaps 20% could go to the district government, 7% to the Provincial government and 3% to the Ministry of Forests, or an environmental trust fund, at the National level.

Within the communities, ESP should facilitate a participatory decision-making process that identifies how they gain access to the benefits. Whether they want to distribute them according to a per capita formula, or per household, or according to some measure of the relative contribution of land area or per labor contribution, these decisions should be taken

by the stakeholders themselves and be clear to all. Operationally, all levels of payment will likely be some sort of wire transfers from the seller/broker directly to banks and sub accounts. The direct deposit from outside reduces the potential for problems and undue influence on the financial flow. Then, each community needs to decide who and how they can withdraw funds from their account. Perhaps Forum members with current withdrawal access to their existing bank account can access the carbon PES funds, with a countersignature required.

Lastly, a good distribution mechanism will identify the timing of payments. In the case of 5 year tVERs (which is the likely credit instrument from this activity), with a sale of the voluntary REDD activity credits up front, the payment should be put into bank CDs with a payout plan for even payments over a 6 year period. Because the money came in up front, but needs to last for at least 5 years, it is paid out over time, perhaps with quarterly distributions, so as not to put too much money into the communities at one time, and to make sure that there is a continued flow of funds.

Pilot Project Actor	Candidate	Who pays
Project promoter with the communities	ESP & District Govt.	USAID via ESP
Community Group – forms a legal entity	The Forums	The communities involved in the Forum itself
Technical Assistance to train, and do, biomass inventory (baseline)	ESP and Forums	ESP and the Forums
International certifier	Contracted. ex: SmartWood, SGS, TUV, etc.	TBD
Technical Assistance 2	C-Credit project designer and package for market	TBD, ESP/District Govt./ Forum
Broker or Buyer	TBD – options exist in the marketplace	Forum and District Govt. through brokerage fees

9. PILOT REDD CARBON CREDIT PROJECT WITH OCSP

As the Orangutan Conservation Services Program (OCSP) is also a USAID-funded project being managed by USAID/Indonesia’s Basic Human Services SO, the Carbon Assessment Team briefly looked into the possibilities for a Carbon credit activity linked to OCSP.

OCSP is an ideal GHG mitigation program because one of its main objectives is conserving forest and reducing deforestation, Indonesia’s largest emission source. Many orangutans live in peat swamp areas, providing a useful convergence of climate and biodiversity issues. This is especially true as the peat swamp forests have significantly more tons of CO₂e in them than forested ecosystems on mineral soils – as the peat itself acts as a large carbon sink. This linkage of biodiversity conservation and REDD through a carbon credit PES activity has been discussed, but has not been made explicit in terms of activity designs, site selection, and monitoring requirements. It is clear that financing from the sale of REDD carbon credits on the voluntary market could greatly assist in the protection of Orangutan habitat, and

potentially generate sufficient revenue to stimulate an increase in the land area under protection.

In order to achieve this goal, OCSP would need to carefully select a site where there is a capable on the ground conservation partner, a willing local government, and entities that have clear control over land use and well defined land tenure. OCSP could directly work to build capacity to design and implement a project, train carbon accounting and forest inventory techniques, and or seek assistance from a public-private partnership. Given the status of the Orangutan, it is likely that a financial entity could be found. It is certain that there is demand for carbon credits generated from a project of this type in the voluntary market. The main objective of OCSP’s involvement in the REDD activities would be to encourage the inclusion of poverty alleviation, improved governance, equitable benefit sharing, and biodiversity conservation in the carbon project approach.

In conversations with Paul Hartman, OCSP Chief of Party, it was determined that a likely site for a Carbon project would be where logging & mining concessions surround Orangutan habitat – near Batangtoru on Sumatra. This carbon project would take place with a mixture of stakeholders: local communities, District Government, 3 timber concessions, 1 Australian mining concession, Conservation International (CI), and Yayasan Ecosystem Lestari – the local co-management NGO as partners. The Indonesia Orangutan Forum would likely participate in the hopes of replicating the experience.

The Batangtoru site provides some opportunities for the realization of a REDD carbon project. It is of a sufficient scale to make it worthwhile at 75,000 hectares. It is directly linked to a population of 300-400 orangutans. It is surrounded by timber and mining concessions, but there is an existing and functioning multi-stakeholder process underway. About 80% of the Batangtoru site is in production forest inside the concessions and 20% is in protection forest that incorporates District Government management. All lands are under tenure control of the National Ministry of Forests, which is potentially a challenge. Lastly, CI is currently working in West Batangtoru and is looking at potentially expanding into the East Batangtoru area; a road splits the two sides.

Pilot Project Actor	Candidate	Who pays
Project promoter with the communities	OCSP, YEL, CI, District Govt., concession holders	OCSP, CI
Community Group – forms a legal entity	Batangtoru (Sumatra), 3 district governments, Community groups, YEL & CI, concessions	OCSP facilitating – but each group pays for its own formation and union into the project management body.
Technical Assistance to train, and do, biomass inventory (baseline)	OCSP & CI	OCSP & CI
International certifier	Contracted. ex: SmartWood, SGS, TUV, etc.	TBD
Technical Assistance 2	C-Credit project designer and package for market	TBD, OCSP/District Govt./ CI
Broker or Buyer	TBD – options exist in the marketplace	Concessionaires, YEL, CI, and District Govt. through brokerage fees

10. PROJECT CYCLE AND TIMELINES AND ILLUSTRATIVE COSTS

A typical Carbon Credit Project moves along the following steps in its development process:

1. Project identification: identifying exact project locations, parties involved, relative roles/responsibilities and benefits, and preparing the preliminary project description. This step is relatively straightforward and typically takes about 1-2 months to complete and costs roughly US\$10,000-US\$15,000.
2. Carbon Assessment due diligence. Methodology for accounting presented in a Project Design Document (PDD): Operational Plan, Monitoring Plan, Additionality justification, Leakage, Permanence, Baseline assessment. This step is involved, complicated and technical in nature and often takes a few tries to get it correct. For the voluntary market, depending upon the complexity of the project, this step can take between 2-6 months and a reasonable cost range is US\$40,000 - US\$100,000.
3. Project due diligence: environmental and social safeguards, as included in project design and the monitoring of those elements. This is really an extension of the previous step, but requires socio-economic survey work to determine baseline levels against which the project can be evaluated during and after implementation, approximately 2-6 weeks. Costing between US\$5,000 – US\$10,000.
4. Planning for distribution of carbon credits: brokerage, direct sale, emissions reductions purchase agreements and distribution mechanism to project participants. This is a process of comparing the options available in the marketplace, and is based upon connections to the right people. This step should be fast, a matter of 1-2 weeks and US\$1,000-US\$2,500.
5. Validation of baseline and operational plans of the project. This is an external, third party validation. Typically it is dependent upon the availability of the Validator and their turn around for the final report. It can take between 6-12 weeks. This is done by a third party and costs between US\$20,000-US\$30,000.
6. Registration of the project with pertinent authorities – Ministry of Forests or Environment, or if the project is for the CDM – with the designated national authority (which is the Ministry of Environment), depending. In Indonesia all parties are familiar with these processes as they have registered a number of projects. If the Project Design Document is done well, this step usually takes a couple weeks for formal communications to take place. The costs depends upon which certification standard and which registry the project chooses but costs vary around US\$5,000-US\$7,500.
7. Project start.
8. Verification of the carbon sequestered, either in standing biomass or additional since the beginning of the project, as defined in the PDD. This is the step where a third party verifies that carbon credits have been generated, what volume was generated by which project activity. This usually takes place after the first or second year, depending upon how frequent the project's monitoring plan calls for it. The Verification process usually takes between 2-8 weeks from the field visit to the time

of the final report, depending upon the number and types of questions the verifier has. A reasonable range is US\$25,000 - US\$40,000 with greater expense being paid for the first verification, with decreasing costs for the service over time.

9. Certification and Issuance: the verified carbon credits are then added to a carbon trading 'registry' to be identified with unique serial numbers and eligible for trading. Depending upon the registry, this process can take a matter of weeks for the initial registration, but subsequent registrations will be handled in a matter of days. A reasonable cost estimate is US\$3,000, with recurring fees for transactions and sales requiring credits to be retired.
10. Sale or Brokerage of the project generated credits in the marketplace and the distribution of funds back to the project participants as previously stipulated. If this is a straight sale, then the funds will be transferred back after the sale. If it is a brokerage arrangement, the funds will be sent back to the project developer/implementer on a rolling basis as they sell. Brokerage fees for LULUCF projects vary between 5%-25% of the value of the sale, while brokerage fees for avoided emissions are typically significantly lower. This stems from the permanence problems that are inherent in LULUCF projects, and their generally bad reputation in Europe, where they are not even allowed on the EUTS.

II. ANNEXES

ANNEX A GLOBAL CLIMATE CHANGE, CARBON & PAYMENT FOR ENVIRONMENTAL SERVICES CONTACTS AND MEETINGS UNDERTAKEN DURING THE WEEKS OF 4/7/08 – 4/18/08

Date	Hour	Meeting	Participants
April 7	3:00-5:30 pm	Kick-off meeting in the IESP Project Office Jakarta, Indonesia. Preliminary discussion to familiarize Keegan to the IESP Project. A first time for Reed to present the desires, or expectations, for a carbon-based payment for environmental services activity. The desire for a few different models of carbon PES for the voluntary market, and the possibilities for this top lay out under the project's sphere of influence. Additionally, Reed introduced Mr. Eisenstadt to the IESP Project Staff and took care of logistical issues related to the activity.	Reed Merrill , Keegan Eisenstadt
April 7	6:00-9:00 pm	Paul Hartman, COP Orangutan Conservation Services Project USAID, Indonesia. Dinner meeting with Paul to discuss the issues related to carbon sequestration and climate change as they pertain to his project.	Paul Hartman, Keegan Eisenstadt
April 8	1:00 – 3:00 pm	Abidah Setyowati, Watershed Specialist team leader IESP, DAI. Abidah is Mr. Eisenstadt lead technical contact in the project. She is focused on the PES from upper watershed protection areas. The potential link between the project areas and the carbon PES concept. This is particularly focused on the areas reforested or rehabilitated by the project. The Idham Arsyad is the IESP technical lead for protected areas management. He is a potential link between the project areas under protection/conservation and REDD tVERs.	Keegan Eisenstadt, Abidah Setyowati, Idham Arsyad
April 8	11:00 am-12:30pm	World Bank LULUCF activities –Tim Brown Sr. Consultant for Natural Resource Economics tbrown2@worldbank.org Tim's boss Joe Lightman was not present at the meeting. Tim Brown was not overly enthusiastic about the possibility for carbon finance from the forestry sector having any impact in Indonesia. He did not know of any upcoming CDM activities, but knew that the central government was very slow to make the policies that were necessary for this to occur. This is true of REDD as well.	Reed Merrill, Keegan Eisenstadt and Abidah Setyowati
April 8	3:00 pm – 5:00 pm	Frank Momberg - Flora and Fauna International 081-2110-4723 frank.momberg@ffi.or.id Frank is a fixture in the climate change and forestry sector in Indonesia. He is a very good general resource person to learn about the context, the sector, the players, etc. FFI is the NGO that is managing the largest forest management project in Asia for the worldbank in Aceh. FFI is involved in numerous projects throughout Indonesia, but the Aceh work has put FFI on the	Keegan Eisenstadt, Reed Merrill, Abidah Seyowati,

CARBON MARKET FEASIBILITY ASSESSMENT: POTENTIAL FOR ESP TO ENTER THE CARBON MARKETS

Date	Hour	Meeting	Participants
		map. There is a big forest monitoring program w/the world bank to look at deforestation rates and try to monitor illegal logging. This is dovetailed w/ the Governor of Aceh's moratorium on logging in the Province – from all concessions, or anywhere.	
April 9	9:00 am	Meeting at the National Planning and Development Agency. New BAPENAS person in charge of water, environment and conservation. He is looking at how to better link ESP to other national priorities. Min. Of Forestry will give a presentation on REDD and the Min. of Environment will talk about Global Environment and Carbon. Ministry of Forestry, Climate Change office – REDD focal point: Nur Masripatin was present, as were representatives from Ministry of Environment - Protected Areas and the Ministry of Planning.	Keegan Eisenstadt, Reed Merrill, Abidah Seyowati
April 9		AusAID – discussion about reforestation and the Mega Rice Project? Phone calls.	
April 10	6:30 am – 6:00 pm	Field day to Bandung, W. Java to present to Watershed Management team and look at upper watershed field sites ESP watershed management team and GIS specialists in-service training. I gave a presentation aimed at capacity building of technical ESP staffers in Climate Change and Carbon as a PES option.	Reed Merrill and Keegan Eisenstadt
April 11		Email and phone calls with John O. Niles of Carbon Conservation Pty. In the US. He is the carbon advisor for Carbon Pool and Dorjee Sun – the Australian carbon entrepreneur who put together the Merrill Lynch \$9M deal in Aceh. It turns out that John O. and Dorjee and Frank Momberg will all be in Aceh next week – at the same time I will.	
April 11	1:00 – 2:30pm	Meeting w/ Daniel Murdiyaso – CIFOR at the ESP project offices – he is on the national REDD working group (academic advisor). CIFOR is a research organization, it does implement some projects such as the ongoing assessment of 'Opportunities of USAID Indonesia Programs in Responding to Climate Change Challenges' funded by USAID/Washington/Climate Change Team. CIFOR is also working on a project for Carbon accounting of USAID projects in forests – in pilot projects in 7 countries, including Indonesia . Do they have that methodology worked out? We talked about what they are doing in Indonesia, how they have remote sensing data for forest cover stratified into 13 strata. There are rough biomass estimates for the 13 forest classes and they are able to apply them over a GIS program if the forests are defined. There is also Landsat and SPOT coverage of all of Indonesia that CIFOR has Access to. They could develop the tool, and ESP deliver the Project specific data and work out the issues – someone would have to reconcile the scale problems between the project's maps and the satellite data. With respect to REDD, A/R CDM, voluntary market carbón PES activities – CIFOR isn't doing much. They developed the first PDDs for the ADB and they were delivered to the ministry of forests and were never taken up. The communities dropped one after the long delay, and the other one was not taken up by the Project Proponent (even though the ADB and CIFOR	Keegan Eisenstadt and Reed Merrill

CARBON MARKET FEASIBILITY ASSESSMENT: POTENTIAL FOR ESP TO ENTER THE CARBON MARKETS

Date	Hour	Meeting	Participants
		developed them) because they felt the costs were too high for them to implement (a local NGO). Other than the two PDDs, I got the sense that Daniel didn't think much of the opportunity for carbón PES in Indonesia.	
April 14	6:00 am – 1:00pm	Flight to Banda Aceh and meetings w/ ESP office staff for orientation. John Pontius, Irfan, Abidah, Tan describing the locations of Forums, the Aceh context, post Tsunami relief leading to upland community work through ESP. Methodology of community engagement and capacity building, field training schools, monitoring, self policing of protected areas, PES with water, etc.	Keegan Eisenstadt, Abidah Setyowati, John Pontius
April 14	1:00- 5:30pm	Field visit to the community Forum – FAMS – currently implementing a PES for water. This community is protecting roughly 602has of forest, and has reforested parts of the land, as their water supply forest. They have undertaken a detailed process to monitor the land, for biodiversity, trees and plants, people and disturbance, etc. The monitoring is thorough and periodic for biodiversity. For security issues it is completely walked every couple of weeks.	Keegan Eisenstadt, Abidah Setyowati, Ivan and Tan
April 15	8:00- 4:00pm	Field visit to FORSAKA community forum near Jantho. They are currently implementing a PES for water. This community is protecting roughly 1,500has of forest, and has reforested parts of the land, as their water supply forest. They have undertaken a detailed process to monitor the land, for biodiversity, trees and plants, people and disturbance, etc. The monitoring is thorough and periodic for biodiversity. For security issues it is completely walked every couple of weeks. They have asked for district level protection for the land and are also actively working with a group of resettled Tsunami coastal fishermen to try to avoid their illegal logging to clear lands to become farmers. This is a big problem for them.	Keegan Eisenstadt, Abidah Setyowati, John Pontius, met w/ Helen and a social scientist from FFI at the site.
April 16	9:00- 10:30am	World Bank Environment Officer Mikko Antti Ollikainen mollikainen@worldbank.org Mikko is the project manager for the AFEP (Aceh Forest and Environment Program). This project works in two large ecosystems, Leuser w/ LIF and Ulu Masen w/ FFI. Most of the money is for monitoring of illegal logging. They are interested in the carbon possibility, but are not looking at it directly under their project and are somewhat willing to leave the carbon work to the BCF, etc.	Keegan Eisenstadt, John Pontius, Irfan Djailani, Abidah Setyowati
April 16	11:00- 12:30pm	Leuser International Foundation – Dr. Reddy Godilla gvreddy.lif@gmail.com Learning about the approach used by LIF in their work. They are working in a manner akin to ESP. Community based, ground up consensus activities. They are looking to pilot conservation and reforestation activities in the Leuser ecosystem in 60 communities. They are specifically looking into the lands that are categorized as “other” or APL under the Indonesian land code. These lands are not designated and LIF is finding that they are being defacto privatized. They will reforest them, and try to get conservation and protection in those areas and see if there is a carbon offset potential. They are not at all interested in rushing into a carbon activity, but are instead a more patient, conservation oriented activity.	Keegan Eisenstadt, John Pontius, Irfan Djailani, Abidah Setyowati

CARBON MARKET FEASIBILITY ASSESSMENT: POTENTIAL FOR ESP TO ENTER THE CARBON MARKETS

Date	Hour	Meeting	Participants
April 16	7:30pm - 12:00am	Evening appearance at a dinner gathering in Banda Aceh with the Provincial Governor of Aceh Province, the Head of the Provincial Forestry department, Dorjee Sun and John O Niles from Carbon Conservation and numerous members of the MaQuarie Infrastructure Investment Bank from Australia. They were doing due diligence on a potential carbon investment – and were taken to the field to visit with the ESP FORSAKA Forum.	Keegan Eisenstadt, John Pontius
April 17		In Aceh with morning return to Jakarta and to ESP office	
April 17		Scott Stanley – initiating email contact. He’s a climate change forester in Indonesia – previously w/ FFI.	
April 18	2:00 pm – 3:30 pm	Trigeany Linggoatmodjo - IESP CTO and other USAID Technical Staff, Jakarta, Indonesia. This meeting included a Power Point presentation of initial findings to USAID. The power point presentation presented some background about the specifics of the Carbon Market, the climate change marketplace and products on the market, observations about the feasibility of various proposed options for Indonesia and some recommendations for the design, and type, of carbon-based environmental services activities that USAID could help to promote.	Keegan Eisenstadt, Reed Merrill, Abidah Setyawati

ANNEX B - NEWS AND INFORMATION ABOUT THE ULU MASEN CARBON ACTIVITY IN ACEH

Carbon credits paid to preserve forest

Tuesday, 26 February 2008

[9/3/08: Updated with Aust-PNG developments. Corrected Ulu Masen carbon credit calculations]

Attempts to preserve threatened rainforests in Asia and Africa are providing early examples of how carbon markets might be used to halt rapid rates of tropical deforestation, and the massive carbon emissions and biodiversity losses that result.

Momentum is building behind Reduced Emissions from Deforestation and Degradation (REDD) initiatives to extend carbon markets to “avoided deforestation” - activities that produce payments for preserving existing forest. Early 2008 has seen the first rainforest project of this kind win independent validation to carbon market accreditation standards in Indonesia while a similarly bio-diverse forest in Cameroon has so far failed to attract carbon investors.

Meanwhile, in Papua-New Guinea (PNG), the government has struck an agreement with Australia to develop a carbon trading regime around credits for avoided deforestation.

The Indonesian project covers a 770,000 hectare (1.9m acres) swathe of the Ulu Masen forest in Sumatra’s Aceh province, home to orang-utans, tigers and elephants. The provincial government claims the support of the local communities for a preservation operation run by Fauna & Flora International and Carbon Conservation that would generate carbon credits for the prevention of logging and clearing for palm oil plantations.

Preliminary budget calculations for the project allow for local communities to receive \$26 million in the first five years of the envisaged 30-year project. This would be their share of the carbon credits generated for the avoided emissions in that first stage of 16.85 million tons of carbon dioxide. The overall revenue to local communities would include payments for forest monitoring and law enforcement, reforestation, restoration and sustainable community logging programmes.

The locals’ revenue share is around half of the total expected value of the credits. The project has won the backing of the most credible carbon offset accreditation standard available in the voluntary market for forestry carbon, that of the Climate, Community and Biodiversity Alliance (CCBA).

"The project shows how solid partnerships with local communities are likely to deliver real reductions of greenhouse gas emissions by conserving a globally-significant tract of rainforest," said the director of the CCBA, Joanna Durbin.

The clearing of native forests at current rates is estimated to be responsible for at least 20 per cent of total world human-related greenhouse gas emissions each year.

REDD is not yet part of the UN’s carbon trading mechanisms, so any projects starting now can only earn credits in the voluntary market. But there is some expectation among

investors that projects begun now will eventually enjoy a value in official markets.

The UN climate conference in Bali last December agreed to move forward on inclusion for REDD in global carbon market mechanisms. This would allow developed countries to offset such credits against their national emissions targets. But this “compliance” market initiative will undergo a pilot stage before probable full-scale introduction after 2012.

Meanwhile, the government of Cameroon says an 830,000 hectare tract of rainforest on the Congo and Gabon borders is under threat because neither conservation groups nor carbon investors have yet taken up an offer to pay for its preservation. The government is asking \$1.6 million a year, just under \$2 per hectare for Ngoyla-Mintom, a tropical rainforest home to gorillas and elephants.

Some quick analysis by Rhett A Butler at Mongabay suggests a REDD project could well be economically viable and worth more to the government than logging. According to his calculations, an avoided deforestation programme could generate \$64 million in today’s dollars in carbon credits over 30 years, compared to \$26 million that could be earned by selling logging concessions.

The \$64m in credits is based on Cameroon’s deforestation rate of 1 per cent per year, conservative estimates of 160 million tons per hectare in emissions from clearing and credits paid at \$3 per ton avoided.

The Australia-PNG Forest Carbon Partnership would see Australia pay to preserve Papuan rainforest and earn carbon credits for use in its own emissions trading scheme under development, or other regional and global emissions trading schemes. Australian prime minister Kevin Rudd says the aim would be to tie in with the emerging Kyoto framework.

Mongabay.com 7&15/2/08, The Economist 14/2/08, Bloomberg 7/2/08, The Age 7/3/08

New Hope for Threatened Sumatran Rainforest Auditors Green-Light Innovative Carbon Finance Proposal

Embargoed Until February 7th at 9:00 am EST

The Ulu Masen Forest Ecosystem in the Indonesian province of Aceh is a poster-child for a threatened rainforest. It is the last large unprotected fragment of rainforest on Sumatra, an island ravaged by decades of rampant deforestation. For years, loggers could not cut the forests of Ulu Masen due to an armed-civil conflict in Aceh, which kept industry at bay. That conflict ended a few years ago, following the massive Tsunami that killed hundreds of thousands and left almost half a million people homeless. The peace accord and the tsunami have increased pressures on the Ulu Masen forests. Peace brings the possibility of loggers; the tsunami created urgent needs for timber and wood.

But deforestation may not be the future for this forest with populations of Sumatran elephant (*Elephas maximus*), Clouded Leopard (*Neofelis nebulosa*), Sumatran Tiger (*Panthera tigris sumatrae*), and Sumatran Orangutan (*Pongo abelii*). An innovative collaboration between the Government of Aceh, Fauna & Flora International (FFI) and Carbon Conservation to use carbon credits to conserve Ulu Masen passed a major milestone. The Rainforest Alliance, an international nonprofit conservation organization, validated that the collaboration's Ulu Masen conservation plans meet the widelyrespected Climate, Community & Biodiversity (CCB) Standards. The CCB Standards are meant to ensure that land use projects are designed to mitigate climate change and deliver compelling community and biodiversity benefits. The Ulu Masen project is the first project for reducing emissions from deforestation in developing countries (REDD) to be independently-approved as conforming to the CCB Standards.

The global carbon market has grown rapidly and forest conservation carbon credits are almost certain to play a central role in the carbon market's 2nd phase (after 2012). Negotiations for how forest carbon credits will be included continue at the diplomatic and technical level. As the first of its kind, the Ulu Masen project is likely to have a significant impact on the methods used and the valuation of so-called REDD carbon credits.

Governor Irwandi Yusuf said, "As Aceh's Governor, I am very pleased that my office, Fauna and Flora International and Carbon Conservation passed the CCB audit. Aceh is serious about leading the world into a sustainable future, by implementing an integrated green approach to land and forest management and by curtailing illegal logging. This is only the first step. The hard work will be in financing and implementing our proposed project to help preserve the largest remaining bloc of unprotected Sumatran forests."

Dr. Joanna Durbin, Director of the CCBA said: "The Climate, Community & Biodiversity Alliance congratulates the developers of the Ulu Masen Ecosystem project for becoming the first project for reducing emissions from deforestation in developing countries (REDD) to be validated under the CCB Standards. The project shows how solid partnerships with local communities are likely to deliver real reductions of greenhouse gas emissions by conserving a globally-significant tract of rainforest. We hope world leaders will adopt a policy framework that supports developing countries, forests, local and indigenous people and biodiversity to benefit from global climate change efforts.'

Mark Rose, Chief Executive Officer of FFI, the world's oldest conservation group and lead conservation partner, said, "We are very pleased our Aceh team has received such a strong endorsement for their conservation field programme. The team works in difficult conditions,

responding to many post-tsunami humanitarian and ecological challenges. FFI will continue to work closely with Aceh's Governor Irwandi Yusuf and our national Indonesian partners to develop this mechanism for large scale forest conservation."

Dorjee Sun, Carbon Conservation's CEO said, "We are ecstatic to be the first REDD project independently validated as meeting high global standards. The fate of tropical forests hinges on the ability of global carbon markets to rapidly mobilize adequate resources to communities with clear, defensible plans for reducing CO2 emissions. This conservation strategy is part of Aceh Green, a bold strategy in Aceh to develop greencertified soft commodities, to relieve pressure on forests and provide sustainable livelihoods. We will be working with Merrill Lynch on the credit monetization strategy."

Tensie Whelan, Rainforest Alliance President said, "We congratulate the government of Aceh, FFI, and Carbon Conservation on the significant steps they've made to develop an ambitious project to conserve a vital forest landscape in Indonesia. The urgency in linking deforestation to the fight against global warming was the take-home message from Bali. While conditions in Aceh are challenging, by working with communities living in the Ulu Masen ecosystem this project is poised at a critical opening in time for progressive change that could catalyze similar conservation elsewhere in Indonesia."

http://www.climate-standards.org/news/news_feb2008.html

Merrill Lynch's carbon bet: Why a Wall Street firm wants to save a forest

Merrill Lynch's carbon bet Why a Wall Street firm wants to save a forest in Sumatra. By Marc Gunther <mgunther@fortunemai.com>, senior writer.

(Fortune) -- The business of "carbon farming" is growing fast -- and Merrill Lynch is the latest big company to bet that it will become profitable. What's carbon farming, you ask? It's a business designed to recognize the value created when trees store carbon dioxide and prevent global warming. So people who plant new trees or prevent existing trees from destruction can get paid for doing so.

That doesn't mean that the tree in your backyard or mine will help pay college tuition or fund a 401(k). For now, the payments are going to villagers in the developing world who agree to protect endangered forests. Starbucks, Marriott, and Rio Tinto, among others, have all agreed to finance projects designed to deter deforestation.

This week, Merrill Lynch, announced that it will invest \$9 million to help save a tropical forest in Aceh, Indonesia. It's the first time a Wall Street firm has invested in carbon farming, and let's be clear: this isn't philanthropy of public relations; it's strictly business. In fact, the man who put the deal together to save the 1.9-million acre forest, called Ulu Masen, believes it could be a very big business. "It will be the biggest carbon project in the history of the world if we can pull it off," says Dorjee Sun, the 31-year-old founder of an Australian startup company called Carbon Conservation.

Here's how the deal will work: Merrill will pay villagers in Aceh, a province on the island of Sumatra, to stop logging their forests. Aceh, of course, is the place that was devastated by a tsunami in 2004 and, before that, wracked by civil unrest. It's also home to Sumatran tigers, clouded leopards and orangutans, and therefore of special interest to environmentalists. The money will be used to train the villagers in alternative livelihoods, like growing coffee, cocoa or palm trees for oil. In exchange, Merrill will get carbon credits, which are also known as carbon offsets -- that's the "crop" in carbon farming. The credits will meet quality standards set a group called the Climate, Community and Biodiversity Alliance (CCBA), whose members include environmental groups Conservation International, The Nature Conservancy and the Rainforest Alliance, and companies as BP, Intel and SC Johnson. The alliance functions as a regulator, albeit without legal clout.

Merrill will pay about \$4 per credit for 500,000 credits per year over the next four years -- \$8 million in all. (The other \$1 million buys an option to acquire more credits.) Merrill then hopes to sell them for a profit to companies that want to voluntarily offset their carbon emissions. Currently, these voluntary credits --each one represents a ton of CO₂ that is prevented from entering the atmosphere -- sell from between \$2 and \$20 each, according to Andrew Ertel, the president and CEO of Evolution Markets, a leading broker of emissions credits.

The credits will be worth a lot more if they can be sold into regulated markets. Greenhouse gases are regulated in Europe and Japan, and laws to control them are being considered in the U.S. and Australia. So far, though, projects like this one -- called "avoided deforestation" or REDD projects, for Reducing Emissions from Deforestation and Degradation -- have not been approved for regulated markets. Deforestation is said to account for about 20% of all global greenhouse gas emissions.

"This is uncharted territory," says Abyd Karmali, global head of carbon emissions at Merrill Lynch. "That's part of the risk that Merrill is taking. How much appetite will there be for credits from projects of this type?"

Speaking by phone from Jakarta, Dorjee Sun says he has pitched large-scale avoided deforestation projects to more than 200 banks, hedge funds, pension funds and conservation groups. He's working with governors in Indonesia and Brazil, and came to the U.S. last fall where he pitch deforestation projects to Howard Schultz of Starbucks and investor George Soros. Sun, a former Internet entrepreneur, is frank about his motives. "The more hectares we manage, the more land we 'farm' carbon on, the more money we make," he says. "Our goal is to be the amazon.com of the Amazon."

First Published: April 18, 2008: 8:14 AM EDT

ANNEX C: NEWS ABOUT MARKET PRICES FOR CARBON CREDITS.

VERs trade in 3-4 euro range

Tuesday, 19 February 2008

While trade in Verified Emission Reductions (VERs) continues to expand worldwide as the demand for carbon offsets grows among organisations and individuals, prices and volumes vary widely according to local conditions, as does the integrity of the credits.

Pointers to any emerging benchmark VER price level are few at this stage with the best indicators coming from Asia and the US. An auction at the Asia Carbon Exchange (ACX-change) in late January saw 15,000 VERs sold at €4.00. The credits were generated from a wind energy project in India with CDM registration. The €4 per VER sale price is up slightly from the €3.76 struck at an ACX-change auction of 100,000 tonnes last August.

Prices in the biggest voluntary market for VERs, the Chicago Climate Exchange in the US, have jumped above \$4 after falling as low as \$1.80 in November 2007. Prices for Phase II vintages (2007-10) of carbon financial instruments (CFIs) on the CCX closed at \$4.40 (€3.00) on February 15. CFIs are the standardised futures contracts by which emission offsets are traded.

Almost 23 million tonnes of CO₂ emission reductions traded on the CCX in 2007, more than double the previous year but volumes are still a fraction of those in the mandatory European and Kyoto markets.

There is very little transparency in the Chicago voluntary market and market observers have found it difficult to determine what is driving price movements. This has led to speculation that prices are being influenced by the stage managing of demand and supply. There is also concern expressed in some quarters over the additionality of offsets generated under the scheme.

VERPAs

This may be among the reasons why a group of legal and environmental interests in US have begun a process to develop a standardised verified emission reduction purchase agreement, or VERPA, contract. VERPAs would be the equivalent of ERPAs that have become so crucial to the financing and development of offset projects in Kyoto's CDM market. Such contracts are struck in advance of a project delivering emissions reductions and associated offset credits and guarantee project developers, the sellers, a market for their credits when eventually issued.

The American Council on Renewable Energy, the Environmental Markets Association and the American Bar Association say a VERPA standard will help firm up the definition of VERs in the US market. This is amid concern over varying levels of disclosure by VER sellers and possible double counting with renewable energy credits.

The proposed VERPA is designed to work within the frameworks of existing carbon registries and accreditation schemes and will require sellers to come up with the equivalent of the Project Design Document (PDD) in the CDM. They envisage it also helping users gain credit for early action under a future mandatory emissions trading scheme in the US – now looking increasingly likely.

The VERPA initiative reflects the growing push to raise the standards of transparency and verification in the voluntary offsets market around the world. A number of third-party accreditation schemes are now emerging. The UK government is expected this week to announce the details of new accreditation standards for the British market.

Tighter standards in the voluntary market may see some narrowing of the price gap between VERs and CERs, now trading around the €15 mark, as the integrity disparity reduces.

<http://www.carbonpositive.net/viewarticle.aspx?articleID=998>

Carbon market snapshot

March, Week 1

INSTRUMENT	PRICE	MNTH CHG
EUAs Dec08 Phase II	€21.38	+1.61
EUAs Dec09 Phase II	€21.92	+1.47
CERs Dec08 EU secondary	€15.70	+1.20
CERs Dec08 US secondary	\$24.19	+2.90
VERs Asia voluntary	€4.00	n/a
VERs US voluntary	\$5.50	+1.60

€=euros \$=US dollars

Sources: [Reuters Interactive](#), [ECX](#), [CCX](#), [Nord Pool](#)<http://www.carbonpositive.net/viewarticle.aspx?articleID=1014#1>

online carbon resources for information about items, glossary, etc.:

<http://www.carbonplanet.com/>

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Winrock International Institute for Agricultural Development

Prepared by:
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Forest Carbon Monitoring Program

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In the interest of simplicity, the website link to this document is presented above. The bibliography is extensive and covers 34 pages of references. It includes all references related to the carbon pools being looked at in Indonesia.

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