New Mechanism Feasibility Study–Final Report (Summary Version)

Study Name: Study on Feasibility of REDD+ Related New Mechanism in Acre, Brazil

Organization Name: Marubeni Corporation

1. Study Implementation Framework

・Acre state government: Cooperation with study, data supply, advice on suitable land selection, negotiator
・ITTO (International Tropical Timber Organization): local work management, technical advice on suitable land selection, coordinating with Brazilian government and Acre state government
・Funbio (Brazilian Biodiversity Fund): Coordinating local study activities, status analysis, suitable land selection, carbon standards, risk analysis, finance, model for profit sharing with communities
・Ludovino Lopes: Status analysis, legal aspects, risk analysis, suitable land selection
・Hdom: PIN creation, forest biomass, leakage, reference scenario, monitoring review, suitable land selection
・Sao Paulo University: Data analysis, deforestation simulations, methodologies
・Cargill International SA: Cooperation with study, project schemes, suitable land selection
・ERM Japan Ltd.: Technical advisory

2. Summary of Projects and Activities

A) Content of projects and activities

We aim to reduce CO2 emissions through REDD+ by working together with our counterparts in Acre, Brazil such as the Acre state government, ITTO (International Tropical Timber Organization), local NGOs and research institutes. Specifically, we will build a mechanism of economic incentives for conducting countermeasures to deforestation and forest degradation by distributing funds including those transferred via carbon emission credits from developed countries among stakeholders in developing countries. Under this mechanism, we aim to reduce CO2 emissions through the so-called REDD+ activities such as forest fire countermeasures, illegal logging prevention through forest security, community livelihood improvement, sustainable forest management, and reforestation. As for setting a reference scenario in REDD+, according to the Acre state government's targets for reducing deforestation, we are assuming a reduction of 164 million tons in CO2 emissions during the 15-year period from 2005 to 2020, although these are only reference figures and a further review will be needed in future. On a project level, we are assuming a reduction of CO2 emissions in the order of hundreds of thousands to millions of tons per year, although this will also depend on the target area. Furthermore, REDD+ projects will contribute to the host country's environmental pollution control measures by preserving biodiversity at the same time as protecting and preserving forests.

B) Conditions in host country

On a federation level, Brazil has pushed forward a forestry protection policy, with then-President Lula da Silva announcing in 2008 a specific deforestation reduction target of 80% over the following ten years (compared with the average of the 1996-2006 period), the first such reduction target for any major developing country. The result of this was a 64% decrease in the deforestation rate in 2009

compared with 2004. In 2010, policies were launched such as prohibiting soy bean cultivation in the Amazon region and prohibiting banks from lending to soy farmers in the Amazon basin for soy bean cultivation on lands they newly logged and cleared. Under these policies, there has been a clamp down on illegal logging and the police and military have been mobilized to conduct monitoring activities. In the clamp down on individuals who carry out illegal logging, more than 700 have been arrested and given prison sentences.

Acre was recognized as a state in 1962, and from early on it vigorously carried out economic activities utilizing its forest areas for resources such as natural rubber. In the 1970s and 1980s, capitalists from southern Brazil moved in and intensified natural rubber production, but in around 1990 political activity began to develop from the dissatisfaction of workers with their labor environment. As part of this activity, an environmental protection movement also emerged with a focus on the prevention of forest destruction. In 2010 Acre's state legislature enacted the System of Incentives for Environmental Services (SISA). This was an extremely important system for guaranteeing a stable and reliable environment for those who would reap the profits from environmental services such as business developers, investors and suppliers. It includes forests' carbon, water resources, scenery, climate change measures, and so on. Acre also enacted a law on environmental services and ecosystem related product programs, and signed a memorandum with the American state of California and the Mexican state of Chiapas with the aim of discussing the foundation of credit trading from the REDD+ initiative.

C) Eligibility as a new mechanism

Brazil's federal government hopes to implement the REDD+ program on the international negotiating table. At this moment in time, no clear guidelines have been given on how to deal with individual projects implemented by the use of market mechanisms and so on. However, on a state government level, legislation and related bodies have been set up to handle the formation of REDD+ credits including bilateral market mechanisms. Furthermore, in the "nested approach", which is being reviewed for introduction, state government level projects and national level projects can be dealt with, double-counting of credits avoided, and an MRV (Measurement, Reporting and Verification) system adopted in accordance with the IPCC. To this end, emission reduction amounts are quantified and assessed objectively by a third party. This approach will satisfy acceptable conditions as a future new mechanism, because it is authorized by a third-party, uses an official reference scenario set by federal and state governments, and adopts an internationally reliable approach regarding the MRV system.

In addition, advantage of promoting REDD+ project under the Japanese Bilateral offset mechanism for private companies is that developing countries can get the merits by the project and because we can promote GHG reduction project that CDM doesn't cover and that we can implement additional reductions.

D) Strategy for spreading projects and activities

The approach in Acre can be reviewed for the implementation in projects not only within Brazil but also in countries with GCF member states and provinces. A future link is also under review between California's emissions trading scheme and Australia and New Zealand, and when such a link is established, markets that can accept REDD+ credits will expand, greatly speeding up REDD+ project implementation in those and other countries.

3. Content of Study

A) Study agenda

The agenda set for this study is as follows.

Regulation content and legislative environment

① Forestry policies and implementation programs of federal and state governments
② REDD+ initiative at federal government level
③ REDD+ initiative at state government level
④ Environmental services program of Acre state government
⑤ Nested approach in Brazil
⑥ Relationship between ownership of emission rights and community residents

Comparative review of various REDD+ methodology

① Voluntary Carbon Standard (VCS)
② Climate, Community and Biodiversity Standard (CCBS)
③ Platinum Standard
④ Acre's position on each standard

Deforestation and emissions

① Current state of forest destruction in Acre
② Past data on forest destruction in Acre
③ Possibility of logging and clearing in forest areas
④ Level of impact of future population growth on forest destruction
⑤ Scenario of forest destruction due to land use planning and social infrastructure
⑥ Acre's reference scenario and scenario as its premise
⑦ Additionality
⑧ Carbon stock in different types of forests

Risk analysis

① Environmental risk: Will carrying out the project have any negative impact or cause any harm to biodiversity, the surrounding air, soil and water, residents' health, etc.?
② Financial risk: The possibility of the project becoming difficult to sustain during the long period of implementation for economic reasons
③ Social risk: The risk of the project having a negative impact on society, politics, economics, culture, etc.
④ Market risk: Does any market mechanism exist or function for projects conducting environmental services?
⑤ Political risk: The risk to the project if the federal government or state government is changed or replaced by an election or other factors
⑥ Legal risk: Risks caused by enforcement of laws, risks due to new regulations

Financial mechanisms

① Financial mechanism for the REDD+ project
② Setting up of a benefit sharing fund

B) Content of study

Field studies were conducted twice, in August and December 2011.
Following items were researched, investigated and discussed.

① Review of the reference level (reference scenario)

② Carbon accumulation estimates and the availability of data
③ Acre state government's REDD+ review progress
④ Brazilian federal government's REDD+ review progress
⑤ Processing of data on reference scenario carbon stock
⑥ Acre state government's REDD+ system progress
⑦ Handling of forest degradation in monitoring
⑧ VCS methodology adopted by REDD+ projects in the Amazon region
⑨ Acre state government's policy for reducing forest destruction
⑩ Reference scenario and monitoring
⑪ VCS methodology based on the nested approach pursued by the Acre state government

The results of the study are as follows.
The Acre state government has established its own environmental services program SISA (System of Incentives for Environmental Services), made a number of arrangements relating to REDD+ projects, and is moving ahead with the nested approach under the GCF to which a number of states within Brazil, including Acre, belong. With regard to emission rights in REDD+ projects in Acre, the state government is the principle owner of emission credits within SISA, while the profits created by the projects go to the project operators. With regard to the relationship with community residents, we recognized the importance of a close exchange of information beforehand via interviews, REDD+ seminars and so on with residents so that there are no misunderstandings after project implementation.

Existing satellite data analysis tells us that although forest destruction has recently been reduced to some extent as a result of government policies, in Acre more than 200 square kilometers of forest destruction still occurs every year. Site inspections also show the huge effect of the economic activities of residents, occasionally revealing forest destruction in grazing area. In the Amazon region, access to forests is closely related to forest destruction, which concentrated on the new construction, road pavement, and around waterways. Carbon stock can be estimated to a certain degree from the distribution of vegetation in existing literature, and the CO2 equivalent in this project region is about 500 million tons.

After careful evaluations, we have identified an area of 1.55 million hectors near the state capital of Rio Branco. This area is surrounded by the reference region which comprises of 4.48 million hectors. There will be leakage management areas of 1.13 million hectors adjacent to the project site. By conducting an effective REDD+ program, we expect to achieve an average of 1.7 million CO2 emissions reductions annually. These values will be verified with an internationally accepted standards, such as ISO 14064-2 and independent verifying bodies.

We expect the initial program costs to be in the range of US$600,000~1,000,000 in order to have the project to have PDD, validation and various REDD+ program activities to be set up. We also recommend Climate, Community and Biodiversity Project Design Standards (CCBS) to be adopted for the safeguard in social and biodiversity impacts.

4. Results of the Study on the Feasibility of New Mechanism Projects/Activities

A) Emission reduction effects by conducting projects/activities

① Deforestation and emission

Greenhouse gases (GHGs) reduction and atmospheric carbon dioxide (CO_2) targets are extremely

difficult to reach by 2050 without reducing forest destruction and degradation that are estimated to emit 5.8 billion tons of CO_2 every year (source: Intergovernmental Panel on Climate Change [IPCC]). Therefore, REDD+ projects are currently considered by the IPCC and international community as specific emission reduction tools.

By reducing deforestation and forest degradation, reduction of CO_2 emission is secured through measurement, reporting and verification (MRV). Specifically, the difference between the case in which no countermeasures are taken as the reference scenario and the case in which countermeasures are hammered out by implementing new policies or programs in REDD+ programs is counted as the emission reduction. Currently, several projects utilizing the standard and methodology of a non-profit organization called the Verified Carbon Standard (VCS) are being undertaken in voluntary markets.

The government of the Brazilian state of Acre is trying to set reference scenarios throughout the state and preparing to enable setting of reference scenarios for each project. To avoid double counting, the government is trying to adopt the Nested Approach to allow different REDD+ levels/scales such as REDD+ projects, REDD+ programs and REDD+ subprograms to be implemented in the state of Acre. It has submitted the Jurisdictional Nested REDD Initiative (JNRI) (http://www.v-c-s.org/JNRI) by the initiative of the state of Acre and is currently collecting public comments. With the Nested Approach mentioned above, reference scenarios will be created at the minimal level of autonomous regions/projects, and by accumulating these reference scenarios, the reference scenario for the entire state will be established.

The Nested Approach has also been discussed by a working group at the level of the federal government. A framework to implement projects is being built separately from the stance of the federal government on REDD+ credits. At the level of subnational states, other states in the Brazilian Amazon region are also preparing legal systems for the Nested Approach.

② Methodology to be applied

In the development stage of this project feasibility study, a methodology certified by the VCS is used. Among the currently certified methodologies, VM0015 Methodology for Avoided Unplanned Deforestation that incorporates several relatively complex deforestation factors is considered to be the most suitable. Meanwhile, the state of Acre is developing a new methodology under the JNRI. In future, more suitable methodologies will be possibly available.

In this project, the target region is used for various purposes. When the methodology to be applied to this project was discussed, VM0015, which is the methodology of the VCS, was determined to be appropriate because it can be used for unplanned deforestation, there are no geographical limitations and it can be used globally. This methodology can be used for this project because the application conditions for VM0015 are satisfied.

B) Reference scenario and boundary settings

① Reference scenario

Reference scenario is the future emission forecast and examined/set by a qualified third-party certification body. In contrast to the clean development mechanism (CDM) in the Kyoto Protocol, there is no examination body to evaluate reference scenarios like the CDM Executive Board for

REDD+ in the United Nations Framework Convention on Climate Change (UNFCCC). However, organizations acknowledged as Designated Operational Entities (DOEs) in the CDM project examine reference scenario settings in REDD+ for the VCS. The VCS is a non-profit organization that does not deal with emission rights specified in the Kyoto Protocol, but certifies offset mechanism projects used voluntarily by private organizations and issues credits. It is the most advanced among existing standards/methodologies, and its use has already started for voluntary markets.

At COP17 held at the end of 2011, both developed and developing nations agreed on the necessity of responses to REDD+ and a certain level of consensus was reached for the reference scenario. Specific method of setting will be discussed in future. In addition, whether REDD+ should be conducted with funds or based on credits utilizing private sectors remains to be determined.

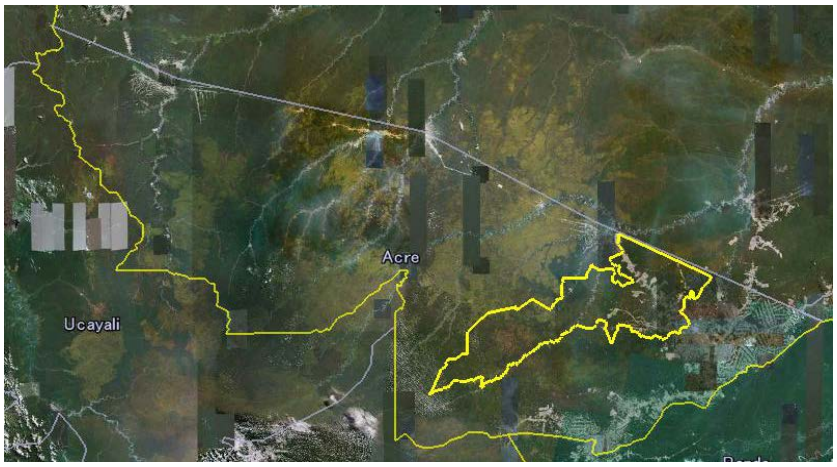
In 2010, the deforestation area in the state of Acre was 20,233 km^2, which accounts for 12.1% of the entire state. The average annual deforestation area was 519.7 km^2 from 1988 to 2010. In consideration of the average carbon stock of 451 tons (CO_2) per hectare in the state of Acre, the annual emission is estimated at about 23.4 million tons (CO_2).

The reference scenario by VM0015 methodology uses linear regression from past data for the first 10 years of the project period and then replaces it with the reference scenario corresponding to the subsequently assumed new environment for the 11^{th} to 20^{th} years. For example if expressway construction increases susceptibility to forest destruction, the reference scenario should be changed corresponding to this environment.

② Project boundary

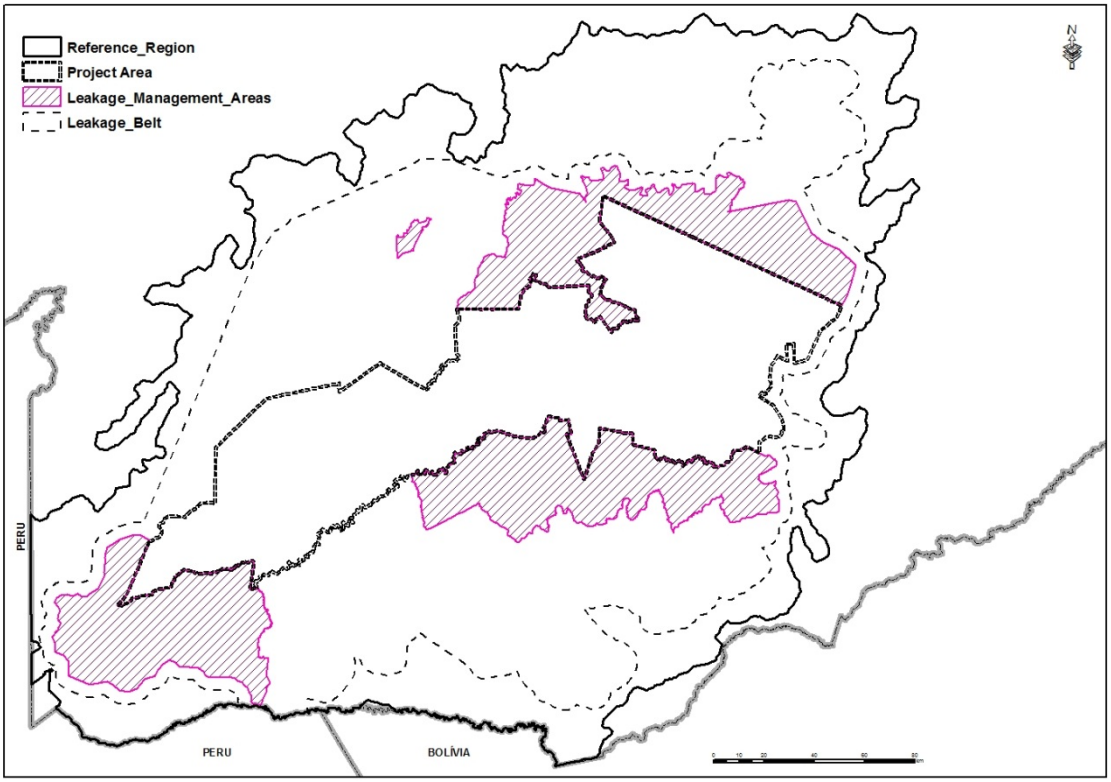
The target region of this study is the land of about 1,557,431 hectares illustrated in the following map. This region is adjacent to Rio Branco, which is the capital of the state of Acre, and experiencing the most rapid deforestation due to human factors.

State of Acre, Brazil



Geographical boundary of the target region: project site (yellow bold lines)

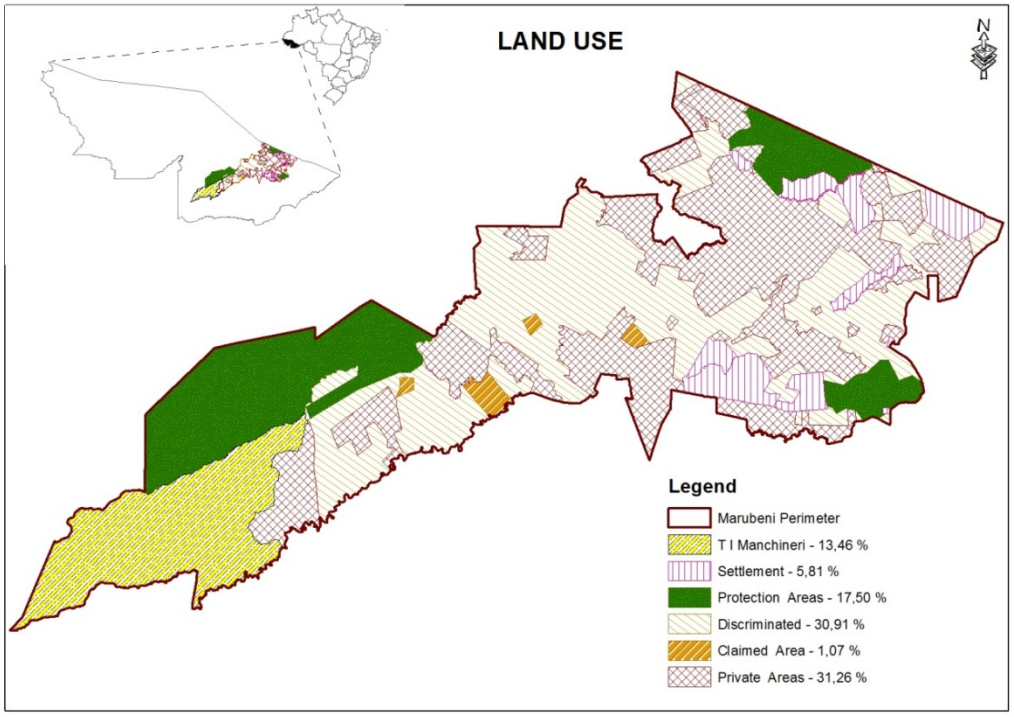
To prepare the reference senario mentioned above, the area designated in the figure below was assumed as the region for reference. Basically, it is necessary to verify that the past deforestation rate of the project area is the same as that of the reference region, but the reference region of this study was set in reference to the data provided by the state government. VM0015 requires the reference region larger than the project area.



Reference region: 4.48 million hectares
Leakage management areas: 1.13 million hectares
Project area: 1.55 million hectares

The target region includes the state of Acre and the neighboring state of Amazonas. Meanwhile, because the shortest linear distance from the project area to the national border with Peru is about 50 km and the flow of people and economic activities is limited, this area is not included in the target region.

As points to consider for selection of the reference region and leakage areas, economic activities, arterial roads and canals were verified. Movement of people expands economic activities through roads and canals, these areas are important to take countermeasures against leakage. Therefore, setting up of leakage management areas that are also monitored for leakage should be considered. For example, BR364, which is a main arterial road, leads from the state capital Rio Branco to the second largest city Cruzeiro do Sul across the state. It is considered neessary to take measures to reduce the leakage pressure for the content of the program as well as to conduct monitoring in this region aggressively



Land use classification of the target region

Size and definition of land use classification:

- TI Manchineri Area (13.46%): region for protection of indigenous people
- Settlement Area (5.81%): designated agricultural land development/farmer residential region
- Protection Area (17.50%): protected region and forest management region
- Discriminated Area (30.91%): governmental region (land use unclassified)
- Claimed Area (1.07%): federal government (military facilities)
- Private Area (31.26%): private property

C) Monitoring method/plan

The Brazilian federal government established a program called Program to Calculate Deforestation in the Amazon (PRODES) in cooperation with the Brazilian Ministry of Environment to monitor forest logging in the Amazon in 1988, and the Brazilian National Institute For Space Research (INPE)

collects satellite photograph data of forest regions every year.

Around the same time, the state of Acre established remote sensing laboratories that use satellite images to monitor land use and economic activities and analyze forest destruction and economic benefits of each economic activity. These have also been utilized for taxation. Such monitoring and analysis activities used a resolution of 1:250,000, which is clearer than images provided by the federal government.

In 2004, the state of Acre introduced a system with an improved satellite resolution of 1:100,000. This enabled clearer classification of municipalities, road construction, land management and water area management. These systems are managed collectively by the State of Acre Central Unit of GIS and Remote Sensing (UCEGEO) affiliated with the State of Acre Technology Foundation (FUNTAC) and have already prepared for providing necessary data to implement REDD+ projects.

D) Greenhouse gases emission and reduction

① Calculation formula

$$E_y = \sum_{j=1}^{J} \left[e^{\{C_1(j) + y \cdot C_2(j)\}} - e^{\{C_1(j) + (y-1) \cdot C_2(j)\}} \right]$$

(Dr. Roseane Silva (2007), Forest Management Laboratory, Brazil)

Ey: annual CO_2 emission (tons)
C1: Emissions expressed in units of tons of carbon dioxide per year
C2: In units of natural logarithm of emissions, with emissions expressed in units of tons of carbon dioxide per year
Y: year

Data processing:
Carbon amount (carbon density) is calculated for each pixel from satellite data images acquired from the INPE to analyze changes in the accumulated carbon amount. Furthermore, independent audit is conducted by a third party to evaluate data and calculated values. Seasonality is eliminated from data. The value in regions covered with clouds that are common in the tropics is estimated to be the same as the average in regions not covered with clouds based on the data in the previous fiscal year.

② Deforestation area

Predicted values of future deforestation are calculated according to the following formula by utilizing pixel data calculated by the data processing mentioned above.

PD = 0.6364 EXP (N – 4)
Where:
PD = probability of forest destruction
N = number of pixels with forest destruction in four pixels

(0 <= N =< 4)

(developed by Geoconsult and now being examined by the VCS for use)

While reference scenarios of the state of Acre use the average of average emissions for the past 10 years, our FS team used the natural function LOG because the forest destruction area ultimately becomes larger than the actual project area if a constant fixed value is used.

③ Carbon stock

Carbon stock is determined by measuring carbon amounts of trees with a method called allometry by sample plot. Generally, the circumference of a tree at adult breast height is measured and the following formula is used:

Carbon amount (tons) = (1.35) x 0.2859 x exp(-0.151 + 2.17 x Log(DBH(cm) / π)) / 1000

Silva (2007)

0.2859: calculation of carbon amount
-0.151 and 2.17: constants for regression analysis
DBH: diameter at breast height
Π: circular constant (pi)
1000: kg to tons
1.35: applied if the diameter of the tree is between 10 cm and 30 cm

④ Calculation results

The carbon stock stored in the forest in 2030 is calculated as 404.3 million tons on a CO_2 basis from the above formulae. About 3.0 million tons of CO_2 on average are estimated to be emitted annually.

By implementing REDD+ projects, the average annual CO_2 emission is estimated to decrease by 1.7 million tons.

Reference Year	Remaining CO_{2e} Stock (M.t.CO_{2e})		Accumulated CO_{2e} Emission Reduction, in M.t.CO_{2e}
	Reference Scenario	Project Scenario	
1990	524.9	524.9	0.0
1995	516.1	516.1	0.0
2000	504.0	504.0	0.0
2005	478.0	478.0	0.0
2010	460.1	470.7	10.6
2015	444.1	464.4	20.4
2020	429.5	458.3	28.8
2025	416.3	452.4	36.0
2030	404.3	446.6	42.4

Reference scenario and project scenario

E) Measurement, reporting and verification (MRV) method for the effects of reducing emissions

The effects of reducing emissions will be measured in accordance with the "Monitoring method" described in (3) above. With the utilization of satellite data, routine observation of ground sites and utilization of supplementary data such as Light Detection and Ranging (LIDAR), the monitoring and verification method will be led.
Because the principle of ISO14064-2 is adopted in the VCS to which the methodology is applied, it is desirable to adopt a principle compliant with ISO14064-2 when MRV is established for REDD+.

Principles used in ISO14064-2 and VCS

Relevance Selecting appropriate GHG emission sources, GHG absorption sources, data, and methodologies for user needs. Completeness Including all relevant GHG emissions and removals. Including all relevant information to support the standards and procedures. Consistency Enabling meaningful comparison of GHG-related information. Accuracy Reducing biases and uncertainties as much as possible. Transparency Disclosing sufficient and appropriate GHG-related information so that users can make decisions with reasonable confidence. Conservativeness Using conservative assumptions, numerical values and methods to ensure that GHC emission reduction or removal increase is not overestimated.

MRV setting method proposed by our company

1. Reference scenario setting

Created based on various available data and research reports related to forests. Using deforestation, forest degradation, cause(s) and the rate of change obtained from them, a reference scenario is created with a mathematical formula model. The state of Acre decided to set the average deforestation area for the past 10 years as the reference scenario. The reference scenario is currently set to be reviewed every 5 years conservatively. Meanwhile, the state of Acre is considering extending the interval to 10 years as generally specified by the VCS from the suggestion that quinquennial review is too conservative.

2. Carbon stock setting

There are two measurement methods for carbon stock in tropical rain forests: one is forest inventory and the other is remote sensing. The IPCC stated that remote sensing may cause concerns over credibility of carbon stock data if it is utilized without forest inventory (IPCC's second report). At this time, there are no setting methods superior to forest inventory in terms of certification method and proof by data, suggesting higher reliability. In the target region of REDD+ in the state of Acre, remote sensing technology will be leveraged using research data of forest inventory that have been collected so far.

3. Estimation of CO_2 reduction

Reduction is calculated by analyzing the relationship between the reference scenario and carbon stock. In the future FS process, results will be compared with the data provided by the National Greenhouse Gases Inventory and National Institute for Amazonian Research (INPA).

4. Content of report

The form compliant with the content prepared by the Governor's Climate and Forest Taskforce (GCF) and addressed in cooperation with the state of California is considered, but the content of report will basically follow the format and content used in the Kyoto Protocol. In the state of Acre, the System of Incentives for Environmental Services (SISA) commission of the state decides the monitoring method, certification method and report method (report format) under the SISA as required by state law. The SISA-related bill has recently been approved in 2011, and commission members will be selected and organizations will be established in 2012. These methods will be operated with adjustments as appropriate to issue credits that are accepted internationally in concert with negotiations with the state of California.

5. Certification of data

A system to enable operation, data management and third-party certification under the conditions compliant with GCF's guidelines is being considered. The data certification method adopted by third-party certification bodies currently working on the CDM project and the CDM Executive Board will be used as a reference.

F) Securing of environmental integrity

There are many positive impacts of REDD+ projects.

- Promoting forest management such as afforestation/silviculture and forest regeneration
- Strengthening recognition of the role of REDD+ in countermeasures against climate change
- Promoting methods of using resources such as water, natural resources and energy
- Obtaining social, environmental, and economic interests from forests by promoting biodiversity and respecting the traditional cultures of indigenous people
- Introducing forest certification/approval systems by third parties based on a transparent process

The potential negative impacts are as follows:

- Potential forest logging in other regions including leakage
  - The countermeasure is to carry out programs that change economic activities of local residents when projects are implemented to avoid activities that are likely to lead to leakage such as prohibition of logging

- Potentially changing natural forests to single forests or artificial forests with a small

number of species

- The countermeasure is to conduct not simple afforestation activities but afforestation that will lead to the recovery of natural forests.

G) Other indirect impacts

There are many positive impacts of REDD+ projects.

- Among other indirect impacts of REDD+ projects, the positive impacts are: effective use of forest utilization projects can be discussed through dialogues with indigenous people and land owners.
- sharing of experience and knowledge cultivated from REDD+ projects compliant with international rules is promoted among many stakeholders.

The potential negative impacts are as follows:

- Concern over widening of social gaps between people who enjoy benefits of REDD+ and those who do not.
  - The countermeasures are to distribute the benefits fairly and to avoid direct payment preferably.

- Requiring different lifestyle/production activities for indigenous people living in the project area
  - The countermeasures are to prepare programs that will lead to the improvement of the living environments of local residents by understanding their livelihood and living environments and explaining REDD+ projects to them from the development stage, and to discuss measures respecting traditional cultures with specialists who understand local cultures and traditions.

H) Other indirect effects

Measures against negative impacts including safeguards will be designed in a PDD process in future.

I) Comments from stakeholders

The stakeholders more directly connected by REDD+ in the Amazon region are its indigenous people, who historically have lived with the forests and become involved in their conservation. On the other hand, the people who have migrated under relocation policies as well as medium and large scale landowners have until now accelerated deforestation. To date, the Acre state government has held dialogs during REDD program planning and reflected the opinions of indigenous people into SISA.

The currently envisaged range includes indigenous people’s groups in the Amazon region, owners of land surrounding REDD+ projects, and in light of the aims of the feasibility study, NGOs etc. would

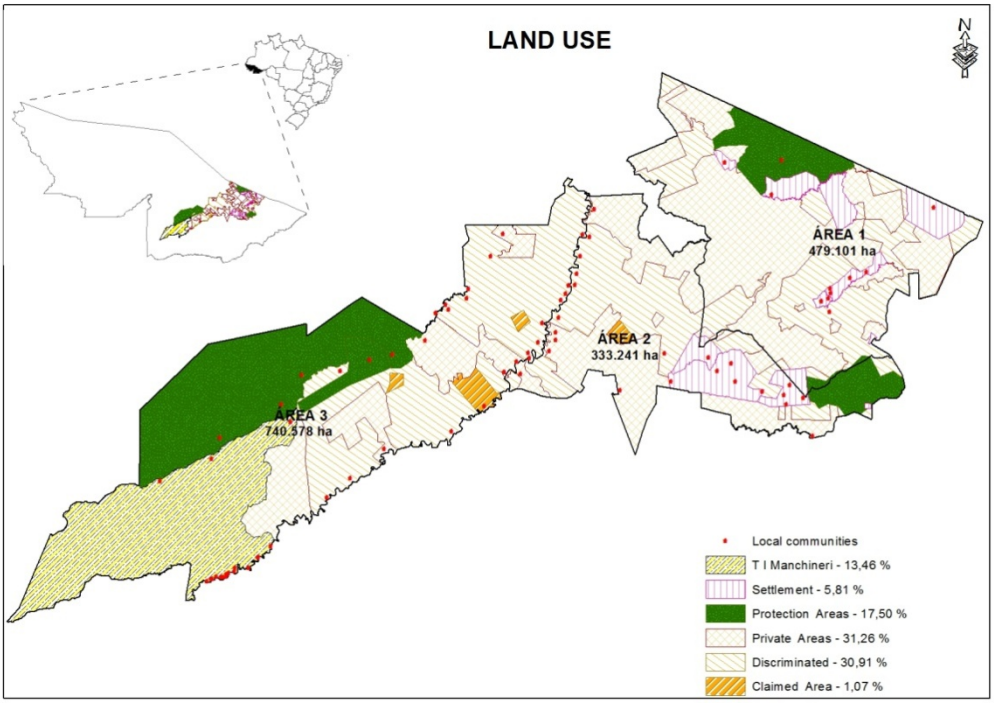
be suitable. The method of collecting comments will be interviews by telephone etc., and the period of collecting comments is assumed to be after the completion of the final local reports of this feasibility survey.

J) Project and activity implementation framework

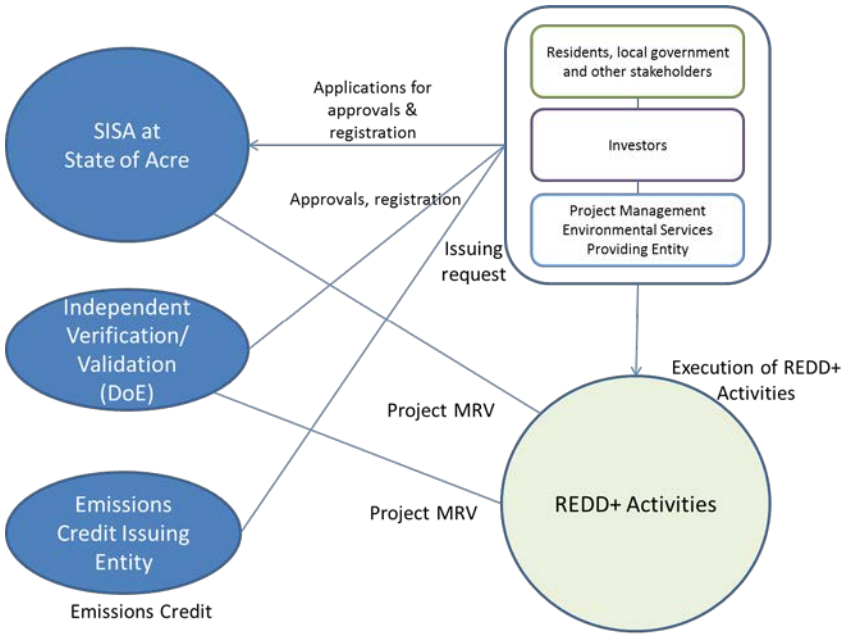
This project site is spread over a large area of 1,550,000 hectares and includes four local governments and a wide range of types of land use, terrain, and residents. There are about 6,000 residents of the region concerned, with whom communication is vital.
For the actual implementation of the project, we are considering the following scheme.

(a) We will diversify the risk by dividing the project region up, and make execution more efficient in expectation of learning effects. Specifically, we are targeting the following merits.
   a) Expectations for the learning effects of project staff
   b) Adapting the management process to each region (different ways of dealing with farmers and indigenous people)
   c) The appropriate project activities to suit regions
   d) Diversification of required funds
   e) Prioritization of tasks

(b) The region has been divided, in consultation with the Acre state government, into the three areas shown in the map below.
   a) Area 1 (north-east area, 491,101 hectares): We will start things off here because it is close to Rio Branco, the capital of Acre, and has access for local studies and plenty of existing data as it already has forest management regions. It is also the area with the most forest destruction caused mainly by human economic activity.
   b) Area 2 (central area, 333,241 hectares): This is in the middle of the region concerned and has widespread designated residential areas centered on farms.
   c) Area 3 (south-west area 740,570 hectares): The largest of the three areas, it has a reservation for indigenous people and, at the present time, relatively light forest destruction.



We will find out the state of forest destruction in each area and plan, prepare and execute suitable project activities for each one.



K) Financial planning

The currently assumed initial investment amount until PDD design and project validation is between about 0.6 and 1.0 million dollars. We assume that setting up REDD+ projects as business investment schemes is usually difficult from a business profitability perspective, and so we will make a further analysis of the situation regarding local land ownership and concessions before also considering a REDD+ project setup scheme with the cooperation of public institutions and private land owners. Moreover, because REDD+ projects have a high level of uncertainty including system risk which makes borrowing difficult, we envisage equity investments or loans.

Estimated REDD+ Project Total Cost	
Project implementation cost	N/A (unclear at this stage)
Monitoring cost	US$ 200,000
Additional development and other costs	US$ 400,000 or more
Total cost	US$ 600,000 or more

Estimated cost of REDD+ project

To date REDD+ projects have mainly been conducted by NGOs and developed countries' governments as part of their assistance to developing countries, and it is rare for them to be carried out with purely private funding. The reason is that project setup and project activity funding requires capital with an extremely high risk tolerance. This is because no income on investment (emissions credits) is expected for some time after project launch.

For initial investments that greatly influence project success in the current project area, the concern is

that return is only expected to equal the issue of credits three to four years after the start of a project. Since most work and costs occur just after the start of a project, financial planning that relies only on cash flow from the issue of credits is not possible. Risk capital such as equity (stock) is therefore needed for at least three years from project launch, and we also have to cope with the fact that it is required every year for various operation expenses.

Without a structure showing a high return, there is no investment demand for these long-term high risk investments.
Investment demand also requires a degree of anticipation of demand from the market for emission credits, which is extremely difficult under the current conditions of lack of demand for compliance-oriented REDD+ credits.

L) Japanese technology promotion strategy

Acre state government hopes to review the satellite technology and data supply of the Japanese-run "Daichi" advanced land observing satellite (ALOS). A proposal should be made to utilize ALOS 2, the successor to Daichi, due for launch in the future. There is also a need for a data utilization method.

M) Future prospects and issues

To realize REDD+ projects of this study under the bilateral offset credit mechanism, actual REDD+ programs for reducing emissions should be established by i) developing MRV methodologies of REDD+ for the bilateral offset credit mechanism, ii) examining the bilateral offset credit mechanism based on the Nested Approach and iii) cooperating with various stakeholders (federal governments, state governments, local governments, communities, NGOs, and private entities) based on safeguards through international industry-academia-government collaboration as soon as possible.

5. Results of the Study on Co-Benefits

The co-benefits of the REDD+ projects include the improvement of the lifestyles of local residents due to credit income and protection of biodiversity by forest preservation.
The above two co-benefits are evaluated/analyzed in accordance with the "Manual for Quantitative Evaluation of the Co-Benefits Approach to Climate Change Projects" as follows:

Classification of co-benefit		Specific co-benefit area	Evaluation indicator	Selected evaluation indicator	Evaluation method
Large classification	Middle classification				
Environmental preservation	Protection of natural resources	Preservation of forest resources	Forest area	○	Monitoring
		Improvement of lifestyle	Household income	○	Interview
		Preservation of species	Species	○	Monitoring

Because REDD+ is considered to be the preservation of forest resources, quantitative evaluation of co-benefits will not be conducted. In addition, REDD+ projects are considered to overlap with co-benefit effects because their design requires taking various countermeasures and mitigation

strategies to avoid deforestation and forest degradation.

Furthermore, working on policies and markets by applying the Climate, Community and Biodiversity Project Design Standards (CCBS), which are the international standards to determine land use-related projects that have positive impacts on biodiversity and local communities, as well as reducing GHGs, will contribute to the formation of projects that provide multifaceted benefits of the reduction in GHGs related to land use, biodiversity preservation and sustainable development of local communities.

Although this is not a co-benefit, application of the CCBS to REDD+ projects is currently the mainstream in the promotion of REDD+ projects. In voluntary markets, there are cases in which credits generated by CCB-certified REDD+ projects carry a premium and attract buyers.

6. Study Results Related to Contribution to Sustainable Development

REDD+ projects directly support the National Policies of Amazon Deforestation set out in December, 2008 by the Brazilian federal government. It can also contribute to the national strategy on biodiversity. Furthermore, it contributes to SISA and, by increasing the income of local residents and encouraging the transition to sustainable economic development, contributes to increasing their standard of living. Concerning safeguards, or basically concerning social safeguards, after finding out the income sources and other lifestyle details of local residents through interviews and REDD+ seminars, information on REDD+ projects will be spread actively by operators. Environmental safeguards are not expected to be easy considering procedures and costs, but applying the currently mainstream CCBS and incorporating the standards into REDD+ projects will contribute to the conservation of biodiversity and the prevention of soil degradation, water restrictions, and the extinction of plant and animal species.

With regard to social safeguards, it is necessary to create REDD+ programs that contribute to improvements of lifestyle and living environment of residents and to encourage communities to participate in the project by creating opportunities to talk with each community using the prepared community distribution chart of the project area and conducting a survey on living situation, livelihood and recognition of REDD+ projects from the development stage.
It is also essential to ensure transparent mutual information exchange during the project period by visiting each community as appropriate (about once a month is considered to be desirable) to hear their direct opinions and create opportunities to explain the progress of the project.
Hearing items include population, sanitation, childbearing and rearing situations, education, employment, land use situations and home ownership situations.

With regard to environmental safeguards, it is important to identify high conservation value points and species. So we need to implement assessment for the biodiversity components, identification of High Conservation Value species and prominent threats to High Conservation Value species.
Based on the assessment, we can develop strategies and recommendation for environmental safeguards, delineation of the area base on the existence of High Conservation Value.