

10 March 2009

ENGLISH/FRENCH ONLY

UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE

Thirtieth session

Bonn, 1–10 June 2009

Item 5 of the provisional agenda

Reducing emissions from deforestation in developing countries: approaches to stimulate action

Information on experiences and views on needs for technical and institutional capacity-building and cooperation

Submissions from Parties

1. At its twenty-ninth session, the Subsidiary Body for Scientific and Technological Advice invited Parties to submit to the secretariat, by 15 February 2009, information on their experiences and views, and to provide country-specific information where possible, on needs for technical and institutional capacity-building and cooperation in, inter alia, the implementation of methodologies for estimating and monitoring changes in forest cover and associated carbon stocks and greenhouse gas emissions, incremental changes due to sustainable management of forests, reduction of emissions from deforestation and forest degradation, national and subnational monitoring and reporting systems, and methodologies for forest inventories, ground-based and remote-sensing approaches. It requested the secretariat to compile these submissions for consideration at its thirtieth session (FCCC/SBSTA/2008/13, para. 44).
2. The secretariat has received seven such submissions. In accordance with the procedure for miscellaneous documents, these submissions are attached and reproduced* in the language in which they were received and without formal editing.

* These submissions have been electronically imported in order to make them available on electronic systems, including the World Wide Web. The secretariat has made every effort to ensure the correct reproduction of the texts as submitted.

FCCC/SBSTA/2009/MISC.2

GE.09-60388

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PAPER NO. 1: ARGENTINA

Republic of Argentina

Submission for the SBSTA on information from Parties on their experiences and views, and country-specific information on needs for technical and institutional capacity-building and cooperation in, inter alia, the implementation of methodologies for estimating and monitoring changes in forest cover and associated carbon stocks and greenhouse gas emissions, incremental changes due to sustainable management of forest, reduction of emissions from deforestation and forest degradation, national and subnational monitoring and reporting systems, and methodologies for forest inventories, ground-based and remote-sensing approaches

February 2009

The SBSTA invited Parties to submit to the secretariat information on their experiences and views, and country-specific information on needs for technical and institutional capacity-building and cooperation in, inter alia, the implementation of methodologies for estimating and monitoring changes in forest cover and associated carbon stocks and greenhouse gas emissions, incremental changes due to sustainable management of forest, reduction of emissions from deforestation and forest degradation, national and subnational monitoring and reporting systems, and methodologies for forest inventories, ground-based and remote-sensing approaches; to be compiled for consideration at its thirtieth session.

The Government of Argentina believes that technical and institutional capacity building and cooperation should be provided in order to assist Parties to develop adequate methodologies to design and implement REDD activities and to facilitate institutional strengthening according to local capacities. Capacity building and cooperation should be undertaken in the context of sustainable development, and supported and enabled by financing and transfer of technology for country specific needs and precede the implementation of REDD activities in the field.

The Government of Argentina also believes that the development of a regional framework to improve development of methodologies and compilation of information in a more efficient way should be explored. Argentina would like to discuss the possibility of establishing regional networks in order to coordinate the development of adequate methodologies and the sharing of information obtained from their implementation. Each ecosystem has unique features and does not respect political boundaries; therefore, methodologies should be developed taking into account these characteristics. We believe that capacity building should be oriented to the development of a network to explore different cooperation areas and activities.

Regarding national and subnational monitoring and reporting systems, Argentina believes that support should be provided in order to assist governments at their national and subnational level in the determination of baselines and elaboration of monitoring systems. This assistance should be provided recognizing different national circumstances and needs, allowing the access to data on forest cover and land use change, forest degradation, associated carbon stocks as harvested

wood products, and greenhouse gas emissions. Cooperation should be provided allowing technology transfer for gathering data on quality forest cover and carbon content by forest ecosystem type.

Capacity building should also be provided to facilitate the identification of direct and indirect drivers of deforestation by economic sector and the design and implementation of alternative productive activities. Cooperation and capacity building is needed for the development and implementation of a monitoring system to strengthen law enforcement.

Cooperation and capacity building is needed to formulate and implement policies on sustainable forest management; strengthening institutional capacities is vital to accomplish this task in an efficient way, maximizing environmental, social and economical benefits. In this regard, capacity building is needed to identify and engage forest dwellers on REDD activities.

Finally, technical training cooperation is required to estimate and analyze land use and land use change opportunity cost. Technical training is also needed for the identification of critical areas with high forest disturbance through predictive models that include several variables such as infrastructure, slope and precipitations, among others.

PAPER NO. 2: COSTA RICA

REDUCING EMISSIONS FROM DEFORESTATION AND FOREST DEGRADATION

INFORMATION ON THE EXPERIENCE AND VIEWS

Submission by:
Costa Rica

1. INTRODUCTION

The Subsidiary Body for Scientific and Technological Advice (SBSTA) invited the parties submit to the Secretariat of the Framework Convention on Climate Change, specific information on requirements for technical capacity building and institutional cooperation in the implementation of the methodologies for estimating and monitoring changes in forest cover and carbon stocks and associated GHG emissions, incremental changes due to sustainable forest management, reducing emissions from deforestation and degradation of forests, national and sub national monitoring and reporting methodologies for forest inventories, monitoring systems and remote sensing ground; the Government of Costa Rica through the National Forestry Financing Fund of the Ministry of Environment, Energy and Telecommunications , has prepared this document with the aim of collecting and documenting the experience of the country to be examined in the 30 session of the Convention.

Costa Rica, since about three decades, decided to tackle deforestation through the implementation of public policies at a high level. These policies have included the use of direct incentives, subsidized credit, fuel taxes, tariff reduction, and establishment of protected wilderness areas and so on. Since the Convention of the Earth Summit in 1992 in Rio de Janeiro, the country took a series of high-level political commitments that led the recuperation of forest cover and hence carbon sinks. This is the experience that the country wants to be considered at the working sessions of the Framework Convention on Climate Change and would be taken into account in the new international regime for reducing emissions by deforestation and degradation of forests

2. BACKGROUND

2.1. The recovery process of forest cover in Costa Rica

Since the Rio Summit held in 1992 Costa Rica, began changes within the legal and policy framework. There is no doubt that they are the cause of the increase in forest cover. The main changes were:

1. Environment is a common heritage of all inhabitants.
2. Right to a healthy environment for all inhabitants and obligation of the Government to promote its fullfitment area included in the National Constitution.
3. Adoption and implementation of international conventions such as Climate Change, Biodiversity and Desertification, among others.
4. Policy framework considers issues beyond the forest sector (tourism, energy, wildlife, environment, biodiversity, soil, etc).

5. Landowners have been receiving financial compensation for forest protection, afforestation and reforestation activities.
6. Development a more efficient institutional framework.

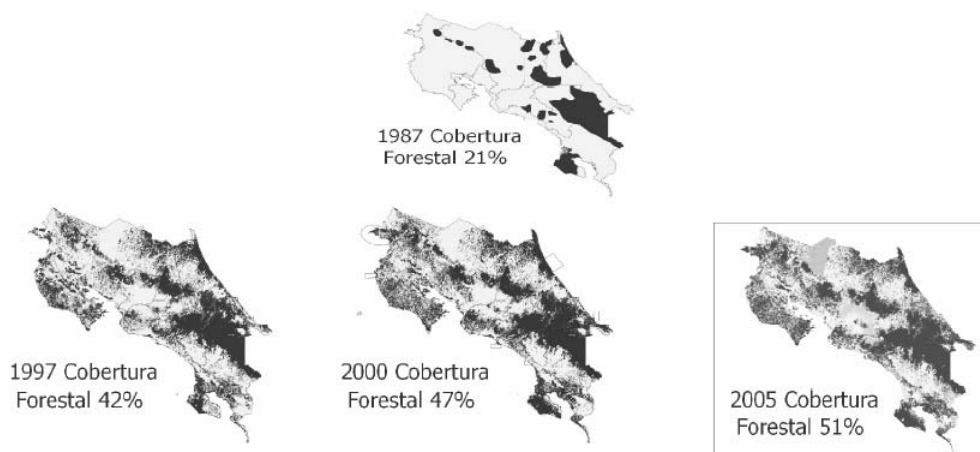
Such legislation and policies led the implementation more specific legislation to tackle deforestation, some of them:

- Program Payment for Environmental Services as a national policy tool to enhance sustainable forest management and restoration of forest cover.
- From the beginning, this program aiming at contributing to the global efforts to reduce emissions.
- Consolidation of a system of protected areas covering 27% of the country (12% of them in the category of National Parks mostly belonging to the Government).
- Ban of change of land use. It is forbidden to cut down forests to convert to other uses.
- Reforestation programs (commercial and noncommercial).
- Increase in tourism-related industry (the main source of income).
- National strategy to combat illegal logging.

All of those policy actions listed are based on a national strategy for conservation planning.

2.2. Policies for reducing deforestation, achievements

The strategy used by the country, undoubtedly has a successful outcome to increase the forest cover, which has increased from 21% in 1987 of the national total area to 52% in 2005, according to results of studies conducted for the FONAFIFO by the University of Alberta and the Instituto Tecnológico de Costa Rica, using satellite imagery.



Source: FONAFIFO, 2009.

The increase of the forest cover has certainly increased the carbon pools in the country. It is important to mention that the increase of carbon pools, are a direct consequence of a strategy that included policy and legal and institutional measures. It should also be noted that Costa Rica was one of the initiators of the Kyoto Protocol and this strategy was aimed to join the global carbon markets.

2.3. Country's investment in the Strategy to increased forest coverage

2.3.1. National Parks and other protected areas

The country holds 27% of its area under different category of protection. Including 9% of the total land area is under National Park category, and belongs to the Costa Rican State. The management of protected areas is in charge of the National System of Conservation Areas (SINAC) which operation cost is about nine million dollars per year. This figure does not include the cost of the land.

2.3.2. Payment for Environmental Services

Payments for Environmental Services Program keeps about 300,000 (6% of the land area) embedded in it. On a cumulative basis, this program has been sheltered from 1997 to 2008, 652,000 ha.

The administration of the Payment for Environmental Services Program (PES) is in charge of the National Forestry Financing Fund, and it has an annual cost of eighteen million dollars. This budget is mostly funded by the Costa Rican society, either by transferring the fuel tax on and international loans. Costa Rica invests in maintaining forest cover and carbon stocks, TWENTY-SEVEN MILLION DOLLARS PER YEAR.

However, there is an unsatisfied demand of about nine hundred thousand hectares for budgetary reasons can't enter in the PES program. It is estimated that at current levels, will require \$ 45 million per year to cover this unsatisfied demand. Only the maintenance of stocks of carbon, will

cost about sixty-five million dollars per year. This figure would rise substantially if we consider aspects such as increase of the opportunity cost that is caused by increased pressure from forest lands, led by demand for biofuels, wood and food security and so on.

3. MONITORING OF FOREST COVER

3.1. Maps of forest cover in the country.

Under the PES Program Costa Rica has carried out regular assessments of forest cover using LANDSAT satellite images. In the last twelve years there have been three assessments of coverage in 1997, 2000 and 2005.

The last coverage map made in 2005, had two main objectives:

a) Identify and classify forest cover in Costa Rica using Landsat ETM + 2004-2005 images, making a comparison to the layers of coverage for the years 1997 and 2000, with special emphasis on the previously identified areas of deforestation.

b) Identify and classify the secondary forests of the region Chorotega and Osa Peninsula, using Landsat ETM + images 2004-2005. Region Chorotega for classification will apply for three successional and the Osa Peninsula for two successional.

The final scale of mapping for the study is 1:200000 in order to be compatible with previous studies and international conventions. This scale allows a minimum mapping unit of 3.0 ha, which is quite accurate for the purposes of FONAFIFO.

The implementation of monitoring of forest cover in Costa Rica is part of a sustained follow-up of researchers from this study to FONAFIFO which began since 1997. This study follows the methodology of previous studies (CIEDES-CCT-CI. 1998, U. Alberta, CST. 2002) to ensure compatibility of previous results. The study applied a methodology defined by the project of NASA called NASA Pathfinder (Skole and Tucker, 1993).

The NASA Pathfinder project is an international initiative designed to standardize space studies of deforestation in the tropics (Brazil, Southeast Asia and Central Africa). This approach ensures that the results of this study are internationally accepted in the context of monitoring of deforestation in tropical forests. Due to the problems identified in previous studies in tropical dry forest (Pfaff et al. 2000, Sánchez-Azofeifa et al. 2001), the methodology has been divided into two components, taking into account the type of forest present: a) NASA Pathfinder methodology for the country's rainforest and b) a method specially developed for the Region Chorotega, dominated by dry forest and tropical moist deciduous forests through a strong dry season (Kalacska 2004b, Arroyo 2005).

3.1.1. Overcome limitations

Previous studies of deforestation and forest cover in Costa Rica were affected by the presence of forests and coffee plantations that are confused with the spectral response of the primary forests. This misclassification is most pronounced in areas where there is shade coffee plantations and forest patches of different ages. To avoid this problem was created two databases: 1) Coverage of coffee provided by the ICAFE and 2) coverage of forest and fruit plantations, compiled by the ITCR from different sources (ITCR and U. Alberta, 2006). Once calibrated, these coverages are applied to satellite imagery in order to change the qualifications of those pixels that were classified as forests but are in fact coffee plantations and forest plantations.

Additionally is used a database coverage / no coverage of forest, with 2255 control points provided by the FONAFIFO and ITCR. This exceeded the number of points used in the year 1997 as in 2000 which used a total of 800 points. Monitoring points were corroborated in the image and analyzed using a contingency matrix. Several control points, in total 380 items were removed from the analysis because they fell into conflict areas associated with the problem of SLC-Off and thus were not considered in the analysis of error, thus giving a total of 1875 points control verification.

The same points were assessed for the total accuracy of the map and the total accuracy of classification of the forest using a contingency matrix.

3.1.2. Main Achievements

During the period 2000-2005 there was a loss of 23,900 hectares equivalent to an annual deforestation rate of 0.09% of national territory. In terms of coverage or the recovery of secondary growth was possible to detect a recovery of 169 thousands hectares equivalent to an annual rate of recovery of the national territory of 0.66%. Therefore the recovery rate of forest cover is 7 times the rate of loss of coverage in 2000-2005.

3.2. Forest inventory

It is also important to mention in the framework of the National Forest Monitoring and Assessments (NFMA), FAO, Costa Rica, was the first country to conduct a forest inventory in 2000, which despite its limitations, confirmed on the ground the results already determined by the estimated coverage through satellite images.

The Forest Inventory Pilot in Costa Rica (GFS) was carried out in 2000, under a Letter of Agreement between the United Nations Food and Agriculture (FAO) Program Evaluation of the Global Forest Resources (FRA) and CATIE), who was supported by the National System of Conservation Areas (SINAC). This is the Costa Rican authority in charge of forestry issues.

Based on the idea of the Program of Global Forest Resources Assessment (FRA) to introduce new approaches for the generation of global information on forests and natural resources, the project focused on strengthening the implementation capacity at national, which is considered key to improving the quality of the forest. In most tropical countries, including Costa Rica, it is generally accepted the need for updated information on forest resources, and Costa Rica is a country in which they carried out activities related to update such information. Normally the "Forest Inventory" came from mapping studies based solely on satellite images. Recently there have been no studies on the national stage, including ground and allowing for estimates of classics such as forest species composition, basal area, volume, biomass and carbon stocks.

3.2.1. Objectives of Pilot Study

The overall objective was to generate concrete experiences installing an inventory at the national level combining biophysical and use of forests, which could serve as example for other countries.

Under this overall objective, there were major technical objectives:

- Plan, prepare, gather, and analyze the biophysical attributes of forest inventory on the ground.
- To create cooperation between different institutions in Costa Rica.
- Generate awareness and technical capacity among experts on national forest assessments and technical forest inventory.
- Under the responsibility of an outside consultant Plan, prepare, gather and discuss an overview of the attributes of forest use.

Additionally, **estimation of carbon stocks was made.**

An assessment of carbon storage was carried out, in different categories of land use. The results were presented separately, since the authors did not have reliable models and "approved", generally accepted for these calculations. The estimates are, therefore, be seen as relatively low-precision approaches. Due the utilized model, all calculations are made for all trees with a dbh > 30cm. Also, for this analysis the class pasture was separated from the other classes of non-forest, because there is a particular interest in Costa Rica to know the extension of the pasture and know how can contribute in the discussions of climate change.

4. METHODOLOGIES OF ESTIMATION AND MONITORING

4.1. Estimation

To date the estimation has been made through map of forest cover, using the zones of life and the amount of hectares of forest, which has allowed us to consider values of stored carbon and the annual growth of the carbon stock, following the IPCC guides.

4.2. Monitoring

Besides, monitoring through satellite imagery and a network of ground control to verify the existence of forest cover, the country has made efforts to establish a network of permanent plots measuring forest, distributed in almost all regions up the country.

However, there is still no systematic monitoring scheme that includes terrestrial inter alia, data volume of biomass, carbon and socioeconomic aspects. Fundamentally this effort in advancing the level of monitoring was not performed, in the absence of a forest carbon market that would justify the effort.

We can say that in terms of monitoring, Costa Rica is between tier 1 and 2 according to the guidelines given by the IPCC.

Tier 1

Simple first-order approximation

- Spatially thick on the default database information available worldwide.
- High degree of uncertainty.
- Method involves the use of several assumptions.
- Values for "default" parameters of the IPCC Guidelines.

Tier 2

A more focused approach.

- Values for the specific country or region generated by default.
- Over-disaggregated data activity.
- Relatively minor uncertainties.

Despite this data if necessary to achieve measurable, monitorable and verifiable, it is necessary to move towards higher levels, will be required more field work in order to discriminate between regions, forest types and other variables.

There is a clear need to build capacity to monitoring the change on land use a very dynamic aspect in Costa Rica, to ensure the permanence of forest areas, mainly in the most vulnerable areas.

4.2.1. Ground-level monitoring

Through the Program of Payments for Environmental Services in charge of FONAFIFO, the country has now secured the existence and permanence of approximately 11% of the country's forest coverage under private domain. This aspect has been documented with reasonable certainty as

well as the location of land and forest health. SINAC additionally manages the area under state domain (such as parks, reserves, etc..) declared by law.

5. VIEWS OF THE COUNTRY

5.1. Reference emissions level

Related with this issue, Costa Rica has said:

- Must be based on a national system of accounting.
- Must be based on reliable data available to determine historical changes in coverage and changes in carbon stock.
- Must be flexible and adapted according to national circumstances.
- The baseline must recognize early actions, as well as the risks and pressures on carbon stocks.
- The methodological procedures to ensure transparency, integrity and consistency of data, they must be based on the IPCC Guidelines.
- The cost of data / methodologies and reliable data must be carefully analyzed.
- It is still necessary to clarify and define specific criteria to measure forest degradation.
- Monitoring is a strong pillar in a REDD program.
- In the case of Costa Rica, the risk of leakage is strongly reduced by a comprehensive approach, which involves the system of protected areas, banning logging and sustainable forest management).

6. NEED FOR PROMOTION OF TECHNICAL AND INSTITUTIONAL CAPACITY.

Following the invitation of the Subsidiary Body for Scientific and Technological Advice (SBSTA) to submit to the Secretariat of the Framework Convention on Climate Change, the specific information needs of technical capacity building and institutional, Costa Rica, as member of the Rain Forest Coalition, considered appropriate to seek assistance in follows:

6.1. Needs for technical and institutional capacity-building and cooperation in.

1. Methodologies for estimating and monitoring changes in forest cover and carbon stocks and greenhouse gas emissions:

- In terms of development methodology, a top-down approach, ie methodologies proposed by the IPCC, for different option of scale. However, bottom-up approaches should enable the countries and project developers to propose their own methodologies to be approved by a body under the UNFCCC. In any case, there is a need for capacity

building in ground level assessment is needed.

- Capacity building needs specifically oriented to include indigenous peoples and local communities, so these stakeholders can be incorporated efficiently in the design and implementation of REDD methodologies (ie, monitoring and measurement carbon stocks).
- Need to create a fund to finance the development of methodologies and support capacity-building initiatives.
- In regards to inventories and monitoring, capacity building needs have been identified in the following areas:
 - The generation of significant data for inventories development and ensure access to this information.
 - Generation and / or access data on forest cover and use land change in.
 - Remote sensing and ground based forest inventories.
- Promote cooperation to facilitate access and technology transfer of in terms of quality of forest cover data and information on carbon by different types of forest ecosystems.
- Capacity building to identify, generates, access, interpret and assess satellite imagery and data on deforestation and degradation.
- Capacity to identify and assess the forests degradation.

6.1.1. Methodologies for estimating emissions

- Capacity building needed to apply the relevant IPCC inventory guidance.
- Improve data on emission factors for the LULUCF sector, given by default emission factors provided by the IPCC Guidelines do not adequately reflect national circumstances.
- Capacity building to enable communities to monitor and assess changes in forest biomass / carbon stocks.

6.2. Incremental changes due to sustainable management of forests:

6.3. Reducing emissions from deforestation and forest degradation:

Capacity building needs in the following issues:

- Identify the direct and indirect causes (drivers) of deforestation by economic sectors.
- Estimation and analysis of land use change opportunity costs.
- Improve community-level capacity building in order to design and implement alternatives productive activities.
- REDD information and consultation processes.
- Design of the national REDD strategy.
- Implementation of measures for REDD, as defined by each country.
- REDD data quality assurance and quality control, archiving and reporting.
- Development of REDD Payment structuring and distribution mechanisms according with the national strategy for REDD.

6.4. Systems for national reporting.

Assistance is required in:

- Institutional capacity building to establish a national emission reduction tracking system and registry.
- At the project level, support is needed to enable governments to assist in the set-up of baselines and monitoring systems.

6.5. Methodologies for forest inventories, ground-based measurements and remote sensing approaches.

Financial and technical assistance are required to development forest inventories methodologies consider the national circumstances, data of biomass and socioeconomic information of the different stakeholders.

PAPER NO. 3: DEMOCRATIC REPUBLIC OF CONGO ON BEHALF OF CAMEROON, CENTRAL AFRICAN REPUBLIC, CONGO, DEMOCRATIC REPUBLIC OF CONGO, EQUATORIAL GUINEA AND GABON

**Convention Cadre des Nations Unies sur les Changements Climatiques
- SBSTA 30 -**

Soumission des vues des Pays du Bassin du Congo

Cette soumission est présentée par les Pays du Bassin du Congo réunis au sein de la Commission des Forêts d'Afrique Centrale (COMIFAC), conformément à la Déclaration des Chefs d'Etat de 1999, dite « Déclaration de Yaoundé », relative à la conservation et à la gestion durable des écosystèmes forestiers d'Afrique Centrale. La COMIFAC regroupe les 10 pays suivants : Burundi, Cameroun, Congo, Gabon, Guinée Equatoriale, République Centrafricaine, République Démocratique du Congo, Rwanda, Sao Tomé et Príncipe et Tchad. L'Angola est actuellement membre observateur.

La COMIFAC est un organe créé par les Chefs d'Etat en vue de gérer de manière concertée les forêts du Bassin du Congo à travers une plate-forme commune dénommée « Plan de Convergence », qui comprend dix axes stratégiques. Le premier de ces axes met un accent tout particulier sur les Conventions de Rio de Janeiro de 1992 dont la Convention Cadre des Nations Unies sur les Changements Climatiques (CCNUCC).

Mandat

Cette soumission est présentée en réponse à la sollicitation des conclusions de l'Organe subsidiaire de conseil scientifique et technologique (SBSTA) FCCC/SBSTA/2008/L.23 du 10 décembre 2008, notamment dans ses paragraphes 10 et 11.

1 - Vision

Selon le rapport sur l'Etat des forêts du Bassin du Congo, les forêts des pays du Bassin du Congo couvrent un peu plus de 200 millions d'hectares, ce qui représente près de 7 % des forêts mondiales, ou encore plus de 10% de l'ensemble des forêts des pays en développement membres de la Convention Climat (FAO, 2005). « *Indépendamment de leur richesse en espèces et de leur taux d'endémisme, les forêts du bassin du Congo représentent l'une des dernières régions au monde qui possèdent de vastes étendues interconnectées de forêt tropicale humide où les processus biologiques peuvent encore se dérouler sans perturbation* » (Etat des forêts du bassin du Congo, 2006).

Les forêts du Bassin du Congo assurent des services environnementaux essentiels pour la communauté internationale, pour l'humanité et pour l'environnement de la planète, notamment au regard de la stabilisation du climat. La communauté internationale a exprimé son intérêt pour le maintien de ces fonctions écologiques essentielles par les décisions prises à Montréal (2005) et à Bali (2007), relayées par la déclaration ministérielle de Poznań (2008).

Reconnaissant ce rôle considérable, les pays du bassin du Congo sont prêts à envisager de maintenir pour leurs ressources forestières et leurs terroirs ruraux un mode d'aménagement qui assure la protection de ces services écologiques et sociaux. Les pays du Bassin du Congo respectent donc par conséquent le principe de responsabilité commune mais différenciée. C'est la raison pour laquelle nous considérons la communauté internationale comme un partenaire dans cette entreprise. Nous attendons néanmoins un partenariat loyal dans lequel chaque partie respecte ses engagements : les pays du bassin du Congo en protégeant ses forêts, la communauté internationale en contribuant à prendre en charge les coûts incrémentaux relatifs aux politiques à mettre en œuvre avec un financement adéquat, prévisible et pérenne. Ce partenariat doit donc être établi pour permettre aux populations des régions forestières de poursuivre une trajectoire de développement compatible avec le maintien de ces fonctions écologiques globales.

Les pays du Bassin du Congo considèrent dans ce cadre que le REDD et ses implications constituent une approche essentielle, structurante et transversale de leur stratégie de développement. La mise en œuvre d'une stratégie REDD est par conséquent beaucoup plus que la protection des forêts; elle va de pair avec la reconnaissance de la valeur globale des ressources forestières dans le contexte d'un développement économique et social des pays participants.

Cette vision s'inscrit pleinement dans l'esprit du principe établi dans l'article 3.4 de la Convention climat : *« Les Parties ont le droit d'œuvrer pour un développement durable et doivent s'y employer. Il convient que les politiques et mesures destinées à protéger le système climatique contre les changements provoqués par l'homme soient adaptées à la situation propre de chaque Partie et intégrées dans les programmes nationaux de développement, le développement économique étant indispensable pour adopter des mesures destinées à faire face aux changements climatiques. »*

En considération de ce qui précède, les pays du Bassin ne souhaitent pas s'engager dans des trajectoires de développement agro-industriel qui ont entraînés dans de nombreux pays une quasi-disparition de leur couvert forestier.

L'atteinte de ces objectifs passe nécessairement par une coordination de l'ensemble des initiatives en faveur des différents pays du bassin du Congo afin d'assurer la cohérence du processus d'ensemble. A cet effet, les ministres de l'environnement et des forêts des pays de l'espace COMIFAC réunis à Bangui en septembre 2008 ont rappelés que *« seule une approche sous-régionale concertée et coordonnée des gouvernements d'Afrique centrale avec l'appui des partenaires bilatéraux et multilatéraux est le gage d'une prise en compte des intérêts de la sous région dans les négociations post-Kyoto sur le climat. »*.

2 - Etape de préparation et besoins en renforcement de capacité

Une phase de préparation est nécessaire à nos pays pour permettre d'évaluer une gamme de scénarios prospectifs de développement en fonction des causes et de l'ampleur de la déforestation et de la dégradation des forêts. Les travaux engagés dans ce cadre devront

permettre aux responsables politiques d'éclairer les conséquences des différentes options de la feuille de route de Bali au regard de leurs perspectives nationales de développement.

L'ensemble des initiatives actuelles et futures devront s'intégrer dans le programme de travail commun des pays du bassin du Congo. Dans ce cadre les partenaires qui oeuvrent dans la sous-région devront y inscrire leurs actions pour répondre aux besoins des pays du bassin du Congo dans la réalisation de cette phase de préparation.

3 - Mise en oeuvre

Tout en réaffirmant leur intérêt à un mécanisme de marché, les pays du bassin du Congo considèrent qu'une phase de transition financée sur un fonds est nécessaire pour assurer le démarrage effectif des politiques et mesures associées au développement des pays dans un contexte REDD.

Pour être adéquat, stable et prévisible, le mécanisme financier sera fondé sur des engagements contraignants des pays de l'annexe I. au prorata de leur contribution aux émissions de gaz à effet de serre. En outre, la répartition des financements devra être basée sur des critères et objectifs mesurables et vérifiables. Cette dernière pourrait être soumise à une clé de répartition bâtie, en plus des stocks de carbone, sur des critères tels que les surfaces aménagées et les surfaces protégées qui reconnaissent les efforts notables de gestion durable des écosystèmes forestiers.

Les pays du bassin du Congo ont des taux de déforestation faibles par rapport aux autres massifs forestiers des zones intertropicales. Aux échelles nationales, des scénarii de références uniquement basés sur des tendances historiques les pénaliseraient fortement. Ces niveaux de référence devront donc être ajustés pour tenir compte des besoins de développement de nos pays.

4 - Besoins particuliers en matière de renforcement de capacités

Ces éléments sont présentés en réponse à la sollicitation du paragraphe 10 des conclusions de l'Organe subsidiaire de conseil scientifique et technologique (SBSTA) FCCC/SBSTA/2008/L.23 du 10 décembre 2008 : *«10. Le SBSTA a invité les Parties à communiquer au secrétariat, avant le 15 février 2009, des informations sur leurs expériences et leurs vues et à communiquer si possible des informations sur leurs besoins particuliers en matière de renforcement des capacités et de coopération techniques et institutionnelles, notamment dans les domaines suivants: mise en oeuvre de méthodologies pour l'estimation et la surveillance des variations du couvert forestier ainsi que des stocks de carbone et des émissions de gaz à effet de serre correspondants, des modifications progressives dues à la gestion durable des forêts et de la réduction des émissions résultant du déboisement et de la dégradation des forêts, mise en place de systèmes nationaux et infranationaux de surveillance et de notification et méthodologies applicables aux inventaires forestiers et aux mesures effectuées au sol et à distance. Il a demandé au secrétariat de compiler ces communications pour qu'il puisse les examiner à sa trentième session. ».*

Une phase de préparation est nécessaire à nos pays. Les principales étapes de l'élaboration des stratégies nationales et régionales ont été identifiées et les principaux besoins en matière

de renforcement de capacité ont été regroupés dans un programme de travail commun présenté en Annexe 1. Ce programme de travail comprend les éléments suivants :

- 1 - Etat des lieux sur la déforestation et dégradation des forêts et émissions associées ;
- 2 – Scénarios de référence possibles et émissions associées ;
- 3 – Analyse et définition des stratégies potentielles en matière de lutte contre la déforestation et la dégradation des forêts ;
- 4 – Cadre de mise en œuvre des politiques et mesures sur le REDD ;

Le renforcement des capacités devra concerner également dans nos pays un certain nombre de composantes transversales :

- 1 – L'amélioration des dispositifs de suivi des émissions de gaz à effet de serre dans le secteur forestier : ces éléments concernent les méthodes de suivi du couvert forestier, l'amélioration des mesures de stocks de carbone, et les méthodes de comptabilisation des émissions ;
- 2 – La mise en place de l'environnement institutionnel : mise en place des instances de coordination au niveau régional et au niveau national, implication et consultation de la société civile.
- 3 – Appui au processus de négociation.

5 - Relation entre communautés locales et application des méthodologies REDD

Ces éléments sont présentés en réponse à la sollicitation du paragraphe 11 des conclusions de l'Organe subsidiaire de conseil scientifique et technologique (SBSTA) FCCC/SBSTA/2008/L.23 du 10 décembre 2008 : « 11. *Le SBSTA a invité les Parties et les observateurs accrédités à soumettre au besoin au secrétariat, avant le 15 février 2009, leurs vues sur les questions intéressant les populations autochtones et les communautés locales des points de vue de la mise au point et de l'application des méthodologies.* »

L'ensemble des pays du bassin du Congo (Cameroun, Congo, Gabon, Guinée Equatoriale, République Centrafricaine, Congo et République Démocratique du Congo) ont signés la déclaration des Nations Unies sur les droits des peuples autochtones bien que la distinction entre populations autochtones et populations migrantes soit moins pertinente en Afrique Centrale que dans d'autres régions du monde.

De nombreuses populations en Afrique Centrale, aussi bien urbaines que rurales, dépendent directement ou indirectement de ressources issues de la forêt (chasse, pêche, cueillette, produits forestiers ligneux et non ligneux).

Les communautés villageoises des terroirs ruraux et des zones forestières, quelle que soit leur origine ethnique, sont concernés par le développement du dispositif REDD. Elles participent aux inventaires d'aménagement forestier durable des concessions et des réserves forestières, qui constituent une source importante de données pour le futur dispositif REDD. Elles sont impliquées dans les techniques de réalisation et de suivi des inventaires de ressources de produits forestiers ligneux et non ligneux, et les recensements de diversité faunistique et floristique. Les populations dépendant de la forêt créent cette valeur ajoutée grâce à leur connaissance des espèces et des habitats et grâce à leurs compétences en matière de repérage au travers de vastes étendues forestières non balisées.

Annexe 1 : programme de travail

Composantes	Sous-Composantes	Activités	Mise en œuvre		
			Régionale	Nationale	Pilotage régional
1. Etat des lieux de la déforestation et la dégradation					
1.1 Etude sur les causes de la déforestation et la dégradation					
		Elaboration d'une synthèse de l'Etat des Forêts spécifiquement sur les causes de la DD	R		
		Etudes sur les causes de la déforestation et la dégradation au niveau national		N	PR
		Evaluation des superficies: cf. composante transversale suivi des émissions			
1.2 Analyse des politiques mises en œuvres dans le pays et impact sur la DD					
		Synthese etudes recentes adaptée aux besoins des Points Focaux pour REDD			
		Identification des analyses/études manquantes		N	
		Elaboration des termes de références études supplémentaires		N	
		Réalisation des études nationales		N	
		Synthèse des études réalisées dans les pays au niveau régional	R		
1.3 Evaluation des émissions de GES associées a la DD historique et actuelle					
		cf. composante transversale suivi des émissions			
2. Scénarios de référence des émissions relatives a la DD					
2.1 Réalisation des scénarios de référence					
		Elaboration des termes de référence des études (nationales et regionale)	R		
		Phase 1. Etude diagnostic sur les méthodologies / Choix (modélisation)	R		
		Phase 2. Diagnostic des moteurs futurs de la DD et			
		Modelisation des futures pressions de DD	R	N	
		Phase 3. Définition de(s) scenario(s) de reference possibles		N	PR
2.2 Evaluation des émissions de GES associées					
		cf. composante transversale suivi des émissions			
3. Analyse et définition des stratégies potentielles de lutte contre la DD					
3.1 Définition des différentes politiques possibles					
		Amélioration des politiques existantes		N	
		Définition de nouvelles politiques		N	
3.2 Etude comparative de ces politiques sur la base d une modelisation des impacts					
		Evaluation des émissions de GES évitées associées		N	
		Evaluation des contraintes induites		N	
		Analyse économique, sociale et environnementale (coûts d'opportunité)		N	
		Etude des alternatives de réduction d'émissions des autres secteurs		N	
3.3 Concertation et validation					
		Concertation et validation		N	
		Adoption officielle par les Gouvernements		N	
4. Cadre de mise en oeuvre du REDD					
		Définition de l'articulation echelles nationale - projets/Mise en place registre carbone national		N	
		Mise en place mecanisme de distribution des revenus/incitations du REDD		N	
		Définition du cadre legal carbone		N	
		Définition du mecanisme de gestion financiere, de marketing des credits REDD		N	

1- Dispositif de suivi des émissions de GES (calcul et monitoring)			
1.1 Dispositif de suivi du couvert forestier			
Synthèse des données existantes	R		
Etude sur la disponibilité des images	R		
Evaluation des capacités nationales (infrastructures et images)		N	
Mobilisation d'une station de réception mobile	R		
Etude pour la mise en place d'une station de réception	R		
Choix de la méthodologie de suivi	R		
Mise en place d'une station de reception	R		
Pré-traitement des images	R		
Mise en place/renforcement unités SIG nationales		N	PR
Traitement et interprétation des images		N	
1.2 Mesures des stocks de carbone			
Etude diagnostic des acteurs et des données existantes		N	
Elaboration de termes de références pour des études	R		
Réalisation d'études nationales - stocks de carbone / équations allométriques		N	
Synthèse des études réalisées dans les pays au niveau régional	R		
Plate forme d'Echange technique de données entre les pays	R		
Mise en place/renforcement inventaires forestiers nationaux		N	PR
1.3 Reporting des émissions de GES issues de la DD suivant les guides du GIEC			
Renforcement des capacités / formations inventaires	R	N	
2 - Environnement Institutionnel			
2.1 Mise en place des instances de coordination sur le REDD au niveau regional			
Mise en place d'une plateforme régionale de concertation entre partenaires	R		
Mise en place d'un comite scientifique regional REDD	R		
Renforcement du Groupe de travail REDD COMIFAC	R		
Appui à la coordination sur le REDD au niveau régional	R		
2.2 Mise en place des instances de coordination sur le REDD au niveau national			
Rendre opérationnels/mettre en place les comités REDD nationaux		N	
2.3 Implication et consultation de la société civile			
Préparation du plan de consultation de la société civile pour tout le processus		N	
Mise en œuvre du plan de consultation		N	
3 - Appui à la négociation			
3.1 Appui aux négociateurs des pays d'Afrique Centrale			
Organisation de réunions de concertation	R		
Préparation de documents techniques d'orientation	R		
Renforcement de la participation des pays aux grandes réunions de négociation	R		
3.2 Appui à la réalisation d'études stratégiques			
Réalisation d' une étude d'impact des mécanismes REDD sur les politiques des pays	R		
Evaluation des positions des différents pays sur le REDD	R		
3.3 Développement des échanges techniques			
Organisation d'ateliers techniques et scientifiques régionaux et internationaux	R		
Echanges avec les négociateurs d'autres régions	R		

[Translation as submitted]

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Submission of views from Congo Basin countries

This submission is tendered by Congo Basin countries gathered under the Central African Forest Commission (COMIFAC), pursuant to the Declaration of Heads of State of 1999 dubbed the “Yaounde Declaration” on the conservation and sustainable management of forest ecosystems in Central African . COMIFAC groups the following 10 countries: Burundi, Cameroon, Congo, Central African Republic, Chad, Democratic Republic of Congo, Equatorial Guinea, Rwanda, and Sao Tomé and Príncipe. Angola currently holds observer status.

COMIFAC is a body established by Heads of State to ensure the collective management of the Congo Basin forests through a common platform dubbed the Convergence Plan, comprising ten strategic thrusts. The first thrust lays special emphasis on the 1992 Rio de Janeiro conventions, notably, the United Nations Framework Convention on Climate Change (UNFCCC).

Mandate

This submission is tendered in response to the request for views made by the Subsidiary Body for Scientific and Technological Advice (SBSTA) FCCC/SBSTA/2008/L.23 of 10 December 2008, specifically in paragraphs 10 and 11.

1 - Vision

*According to *The Forests of the Congo Basin: State of the Forest 2006*, forests of Congo Basin countries cover about 227 million hectares, representing 7% of the world’s forest, or more than 10% of the total forest area of developing countries which are signatories of the Climate Convention (FAO, 2005). “In addition to its species richness and endemic species, the Congo Basin also represents one of the last regions in the world where vast interconnected expanses of tropical rainforest permit biological process to continue undisturbed.” (*The Forests of the Congo Basin: State of the Forest 2006*)*

The Congo Basin forests render vital environmental services to the international community, to mankind and to the global environment, especially in climate regulation. The international community has been keen on sustaining these essential ecological functions through the decisions taken in Montreal (2005) and Bali (2007), as echoed by the Ministerial Declaration of Poznań (2008).

In recognition of this important role, countries of the Congo Basin would readily maintain, in respect of their forest resources and rural products, a management scheme that sustains these ecological and social services. Countries of the Congo Basin

therefore comply with the principle of shared but differentiated responsibility. Hence, we consider the international community as a partner in this effort. Nonetheless, we look forward to a genuine partnership whereby each party honours its commitment: with Congo Basin countries protecting their forests, while the international community incurs the incremental costs arising from policy implementation by providing adequate, predictable and stable funding. Accordingly, the establishment of such partnership should enable forest communities to pursue a development path consistent with the sustainability of these global ecological functions.

In this regard, Congo Basin countries believe that REDD and its implications provide an essential, comprehensive and cross-cutting perspective for their development strategy. Implementation of REDD strategy therefore goes far beyond forest conservation: it is intertwined with the acknowledgement of the overall value of forest resources in the social and economic development of participating countries.

This vision is fully consonant with the spirit of the principle enshrined in Article 3.4 which provides that: *“The Parties have a right to, and should, promote sustainable development. Policies and measures to protect the climate system against human-induced change should be appropriate for the specific conditions of each Party and should be integrated with national development programmes, taking into account that economic development is essential for adopting measures to address climate change.”*

In consideration of the foregoing, countries of the Basin do not intend to pursue the path of agro-industrial development that has virtually eroded the forest cover in many countries.

The fulfilment of these objectives is interrelated with coordination of the gamut of initiatives implemented in various Congo Basin countries to ensure the consistency of the comprehensive process. To this end, ministers in charge of the environment and forests of COMIFAC member countries meeting in September 2008 recalled that *“only a concerted and coordinated sub-regional approach of Central African governments supported by bilateral and multilateral partners can ensure that the interests of the sub-region will be taken into account in the post-Kyoto negotiations on the climate.”*

2 – Preparatory stage and capacity building needs

A preparatory phase is essential for our countries to assess a gamut of forward-looking development scenarios in relation to the drivers and scale of deforestation and forest degradation. Work undertaken in this regard should help policymakers to clarify the various options contained in the Bali road map in light of their national development plans.

All current and future initiatives should be incorporated in the common work programme of Congo Basin countries. Hence, partners operating in the sub-region should align their actions so as to respond to the needs of Congo Basin countries in the implementation of this preparatory phase.

3 - Implementation

In reaffirming their interest in a market mechanism, Congo Basin countries believe that a transitional phase, supported by a fund, is necessary to ensure the effective implementation of policies and measures associated with country development under REDD.

To ensure adequacy, sustainability and predictability, the financial mechanism will be based on binding commitments of Annex I countries proportional to their levels of greenhouse gas emissions. Additionally, the distribution of funding should hinge on measurable and verifiable criteria and targets. This could be based on a sharing formula developed, in addition to carbon stocks, on criteria such as managed and protected areas that recognize the remarkable efforts in sustainable management of forest ecosystems.

Congo Basin countries have lower deforestation levels compared to other forests of intertropical areas. At national scales, reference scenarios solely based on historical emissions would be highly detrimental. These reference levels should therefore be reviewed to factor in the development needs of our countries.

4 – Specific capacity building needs

These issues are raised in response to paragraph 10 of the resolutions of the Subsidiary Body for Scientific and Technological Advice (SBSTA) FCCC/SBSTA/2008/L.23 of 10 December 2008: *“The SBSTA invited Parties to submit to the secretariat, by 15 February 2009, information on their experiences and views, and to provide country-specific information where possible, on needs for technical and institutional capacity-building and cooperation in, inter alia, the implementation of methodologies for estimating and monitoring changes in forest cover and associated carbon stocks and greenhouse gas emissions, incremental changes due to sustainable management of forests, reduction of emissions from deforestation and forest degradation, national and subnational monitoring and reporting systems, and methodologies for forest inventories, ground-based and remote-sensing approaches. It requested the secretariat to compile these submissions for consideration at its thirtieth session.”*

A preparatory phase is necessary in our countries. The key stages in designing national and regional strategies have been identified and the key capacity building needs have been clustered in a common work programme outlined in Annex 1. This work programme has the following components:

- 1 – Situational analysis of deforestation and forest degradation and related emissions;
- 2 – Possible reference scenarios and associated emissions;
- 3 – Analysis and design of potential strategies to mitigate deforestation and forest degradation;
- 4 – Policy implementation framework and REDD guidelines;

Capacity building should also target a number of cross-cutting components in our countries:

- 1 – Strengthening monitoring systems for greenhouse gas emission in the forest sector: these factors relate to forest monitoring methods, enhanced carbon stock measures, and emission assessment methods;
- 2 – Building an institutional environment: establishing coordination bodies at regional and national levels, civil society participation and consultation.
- 3 – Supporting the negotiation process.

5 – Link between local communities and REDD application methods

These issues are raised in response to paragraph 11 of the resolutions of the Subsidiary Body for Scientific and Technological Advice (SBSTA) FCCC/SBSTA/2008/L.23 of 10 December 2008: *“11. The SBSTA invited Parties and accredited observers to submit, if appropriate, to the secretariat, by 15 February 2009, their views on issues relating to indigenous people and local communities for the development and application of methodologies.”*

All countries of the Congo Basin (Cameroon, Congo, Central African, Democratic Republic of Congo, Equatorial Guinea and Gabon) are signatories of the United Nations Declaration on the Rights of Indigenous Peoples, although the distinction between indigenous people and immigrant communities is less apparent in Central Africa than in other regions of the world.

Many Central African communities, both urban and rural, depend directly or indirectly on forestry products (hunting, fishing, harvesting, forest and non-forest products).

Local communities from rural and forest areas, irrespective of their ethnicity, are concerned by the development of the REDD scheme. They participate in forest inventories for the sustainable management of forest concession and reserves, representing a significant data source for the future REDD system. They are involved in skills for conducting and monitoring inventories of forest and non-forest products, and wildlife and plant inventories. Communities thriving on forests create such added value through their knowledge of the species and habitats and their ability to locate large expanses of untracked forests.

Components	Sub-components	Activities	Implementation		
			Regional	National	Regional steering
1. Inventory of deforestation and forest degradation					
1.1 Study on the causes of deforestation and forest degradation					
		Preparation of a summary of the State of the Forests specifically on the causes of deforestation and forest degradation	R		
		Analysis of deforestation and degradation causes at a national level		N	PR
		Evaluation of areas: see transversal component emissions monitoring			
1.2 Analysis of policies implemented in the countries and impact on deforestation and forest degradation					
		Summary of recent studies adapted to the Focal Point requirements for REDD			
		Identification of missing analyses/studies		N	
		Preparation of reference terms supplementary studies		N	
		Conduct of national studies		N	
		Summary of studies carried out in the countries on a regional level	R		
1.3 Evaluation of current and historic greenhouse emissions associated with deforestation and forest degradation					
		see cross-cutting component on emissions monitoring			
2. emissions reference scenarios relating to deforestation and forest degradation					
2.1 Production of reference scenarios					
		Preparation of terms of reference for studies (national and regional)	R		
		Phase 1. Diagnostic study on methodologies / selection (modelling)	R		
		Phase 2. Diagnostic of the future drivers of deforestation and forest degradation and modelling of future pressure of deforestation and forest degradation	R	N	
		Phase 3. Definition of possible reference scenario(s)		N	PR
2.2 Evaluation of associated greenhouse gas emissions					
		see cross-cutting component emissions monitoring			
3. Analysis and definition of potential strategies for combating deforestation and forest degradation					
3.1 Definition of policies					
		Improvement of existing policies		N	
		Definition of new policies		N	
3.2 Comparative study of these policies on the basis of a modelling of the respective impacts					
		Evaluation of associated greenhouse emissions avoided		N	
		Evaluation of constraints inferred		N	
		Economic, social and environmental analysis (opportunity costs)		N	
		Study of alternatives for reducing emissions in other sectors		N	
3.3 Consultation and validation					
		Consultation and validation		N	
		Official adoption by the governments		N	
4. REDD implementation framework					
		Definition of the structuring of national scale projects/Setting up of a national carbon register		N	
		Setting up of a mechanism for distributing REDD income/incentives		N	
		Definition of carbon legal framework		N	
		Definition of mechanism for financial management, marketing of REDD credits		N	

1- Measures for monitoring greenhouse gas emissions (calculation and monitoring)			
1.1 Measures for monitoring forest cover			
Summary of existing data	R		
Study on the availability of images	R		
Evaluation of national capacities (infrastructures and images)		N	
Mobilisation of a mobile receiving station	R		
Study regarding the setting up of a receiving station	R		
Selection of monitoring methodology	R		
Setting up of a receiving station	R		
Pre-processing of images	R		
Setting up/strengthening of national SIG units		N	PR
Processing and interpretation of images		N	
1.2 Carbon stock measurements			
Diagnostic study of participants and existing data		N	
Elaboration of terms of reference for studies	R		
Conduct of national studies - carbon stocks/allometric equations		N	
Summary of studies carried out in the countries on a regional level	R		
Platform for the technical exchange of data between the countries	R		
Setting up/reinforcement of national forest stocks		N	PR
1.3 Reporting of greenhouse gas emissions originating from deforestation and forest degradation in accordance with GIEC guidelines			
Capacity building /inventory training	R	N	
2 - Institutional environment			
2.1 Setting up of REDD coordinating bodies at regional level			
Setting up of a regional consultation platform between partners	R		
Setting up of a REDD regional scientific committee	R		
Reinforcement of REDD COMIFAC working group	R		
Support for REDD coordination at regional level	R		
2.2 Setting up of REDD coordinating bodies at national level			
Setting up REDD national committees/making these operational		N	
2.3 Involvement of and consultation with civil society			
Preparation of civil society consultation plan for the whole process		N	
Implementation of consultation plan		N	
3 - Support for negotiation (see sheet A3)			
3.1 Support for negotiators in Central African countries			
Organisation of consultation meetings	R		
Preparation of technical orientation documents	R		
Strengthening country participation in major negotiation meetings	R		
3.2 Support for the implementation of strategic studies			
Conduct of an impact study of REDD mechanisms on countries' policies	R		
Evaluation of the positions of different countries with regard to REDD	R		
3.3 Development of technical exchanges			
Organisation of regional and international technical and scientific workshops	R		
Exchanges with negotiators from other regions	R		

ANNEX : REDD REGIONAL WORK PROGRAMME

PAPER NO. 4: ECUADOR

United Nations Framework Convention on Climate Change
SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE

Submission by Ecuador

(As decided in SBSTA 39)

This document has been developed in attention to *conclusion 10* of SBSTA 29, agenda item 5 (Reducing emissions from deforestation in developing countries: approaches to stimulate action). This conclusion call parties to submit information in the context of *Decision 2/COP13* on “their experiences and views, and to provide country-specific information where possible, on needs for technical and institutional capacity-building and cooperation”, in inter alia, the following points:

- The implementation of methodologies for estimating and monitoring changes in forest cover and associated carbon stocks and greenhouse gas (GHG) emissions,
- Incremental changes due to sustainable management of forests,
- Reduction of emissions from deforestation and forest degradation,
- National and subnational monitoring and reporting systems, and
- Methodologies for forest inventories, ground-based and remote-sensing approaches.

Ecuador: Experiences, views and requirements for the construction of capacities

1. The implementation of methodologies for estimating and monitoring changes in forest cover and associated carbon stocks and greenhouse gas emissions

- a. Ecuador has developed a national mapping of vegetation cover for anthropocentric use, in a national level elaborated with information of the period 1995 – 2000. This map has been detailed at scale 1:50.000 by CLIRSEN (Center of Natural Resources Integral Inventories by Remote Sensing).
- b. Additionally, Ecuador counts with other institutions with the human and technical capacity to monitor forest cover change in the country: the Ministry of Environment and the Ministry of Agriculture.
- c. The Ministry of Environment, through the “Socio Bosque” Program, has initiated an update of the vegetation cover map at a scale 1:50.000. Socio Bosque Program is the national REDD proposal for Ecuador. The program is based in giving incentives to forest owners for their conservation.
- d. The Ministry of Environment requires funds for the fulfillment of the vegetation cover map, the studies for monitoring the forest cover change, and the associated carbon stocks and greenhouse gas emissions.

2). Incremental changes due to sustainable management of forests

- a. Traditionally, Ecuador has based their forest management policies in command and control instruments. The current government policy is based in a new structure of forest governance Model, which includes: control of illegal logging, reforestation, sustainable forest management,

land titling, and the innovative component, positive incentives for the conservation, through “Socio Bosque” Program.

- b. Socio Bosque Program does not provide the incentives for the sustainable forest management, but it requires that the owners define the areas dedicated to the sustainable forest management, therefore the program counts with the required information for the forest management and the forest control.
- c. Ecuador, through the Ministry of Environment, has made important investments to improve the forest control system and the sustainable forest management; during 2008 the Ministry has invested near to two million dollars.
- d. Ecuador has institutions with human and technical capacities to perform forest management and forest control actions.
- e. Ecuador has identified the needs of funds to develop proposals already implemented and also the need to reform certain regulations and specifically technical assistance related to changes of carbon stocks and greenhouse gas emissions associated to sustainable forest management.

3). Reduction of emissions from deforestation and forest degradation

- a. Integrating degradation into a REDD scheme should be voluntary to parties because of the technical and institutional difficulties to apply the proposed methodologies to assess degradation and because of lack of consensus about its definition.
- b. Degradation should not be seen as a carbon stock loss in forest only, but as a process in which the carbon stock is continuously lost until there is a change in the vegetation cover from “forest” to “no forest”. The difference with deforestation is that degradation is a slower process than deforestation.
- c. Ecuador does not count with experiences related to the measure of emissions from forest degradation, that’s why any development in evaluations for the reductions of emissions from forest degradation, should be transfer, both methodologies and technological resources, and requires financial support.

4. National and subnational monitoring and reporting systems

- a. The tendency to implement a REDD scheme for parties should be oriented towards the national scale. Any subnational implementation of REDD should be inserted into a progressive process moving towards the national scale.
- b. Only one single national monitoring and reporting system should be put forward. Any reduction of emissions resulting from the implementation of a subnational REDD scheme should be accounted into the national monitoring and reporting system. The previous system should be fully controlled and administered by the State.
- c. Ecuador has the human, technical and institutional capacities to develop this system, but, financial support and technique assistance is required.

5. Methodologies for forest inventories, ground-based and remote-sensing approaches

- a. The experience of Ecuador in regards to methodologies applied for forest inventories is limited to a subnational scale in the context of specific projects.
- b. Remote sensing has been used in Ecuador to characterize vegetation cover including forests, among other things to assess land cover changes. The methodologies used have been the traditional approaches using the spectral signature of different types of vegetation through supervised and unsupervised classifications and additional field control.
- c. Current human capacity in the country exists to work on different software like: ERDAS, IDRISI, ILWIS, and TNT MIPS in less intensity. Traditionally the family of LandSat has been

used for that purpose. Other experiences has been developed also though the use of ASTER, Spot, Inocnos, in less intensity.

- d. When it comes to ground-based monitoring the traditional methods using plots have been used. People engaged in the management of those plots are in the process of systematizing the available information scattered all over the country, including the information of few permanent plots installed in specific regions of the country.
- e. Currently Ecuador keeps a dialogue with FAO in order to implement the Forest Resource Assessment. That would be the first effort to put in place a systematic ground-based inventory covering the entire country.

Jakarta, 15 February, 2009.

Views and Experiences on Needs for Technical and Institutional Capacity Building and Cooperation in Methodologies for Reducing of Emissions from Deforestation and Forest Degradation

Submission on the Agenda Item 5 of SBSTA: Reducing Emission from Deforestation in Developing Countries: Approach to Stimulate Actions

In Poznan, 1- 13 December 2008, the Subsidiary Body for Scientific and Technological Advise (SBSTA) invited parties to submit *their experiences and views, and to provide country-specific information where possible on needs for technical and institutional capacity building and cooperation in, inter alia, the implementation of methodologies for estimating and monitoring changes in forest cover and associated carbon stocks and greenhouse gas emissions, incremental changes due to sustainable management of forests, reduction of emissions from deforestation and forest degradation, national and sub-national monitoring and reporting systems, and methodologies for forest inventories, ground-based and remote sensing approaches.*

The Government of Indonesia hereby submits its views and suggestions to the SBSTA.

EXPERIENCES AND VIEWS

1. Forest Resource Information System (FRIS) and National Carbon Accounting System (NCAS)

As a high forested country, Indonesia has long experiences in conducting forest inventory, in particular on supporting the management of production forests. Approaches and methodologies have been improved from time to time, and a more comprehensive system was developed to enable monitoring forest cover changes for all types of forests within the country.

Nevertheless, with the emerging issue of climate change, there is an urgency to establish a forest monitoring system that could include monitoring of carbon stocks changes and potential greenhouse gas emissions.

In regard to the need of having a more reliable system that may support both sustainable forest management and climate change-related activities in forestry; Indonesia - in collaboration with Australia - has been developing Forest Resource Information System (FRIS) and National Carbon Accounting System (NCAS) since 2007. FRIS was designed to support sustainable forest management practices as well as to provide tools for decision making process relating to forest resources management and utilization. In addition, FRIS will also provide Indonesia with better quality of data and information in a transparent manner in a regular period (e.g. five yearly bases) of forest resource assessment (FRA) – which was coordinated by FAO In addition, FRIS will provide information to be used as basis

to develop a Reference Emission Level (REL) for REDD as well as providing important forestry inputs to the National Carbon Accounting System (NCAS).

In order to enable the system to adequately support management practices and decision making process, at least the following six basic components are required:

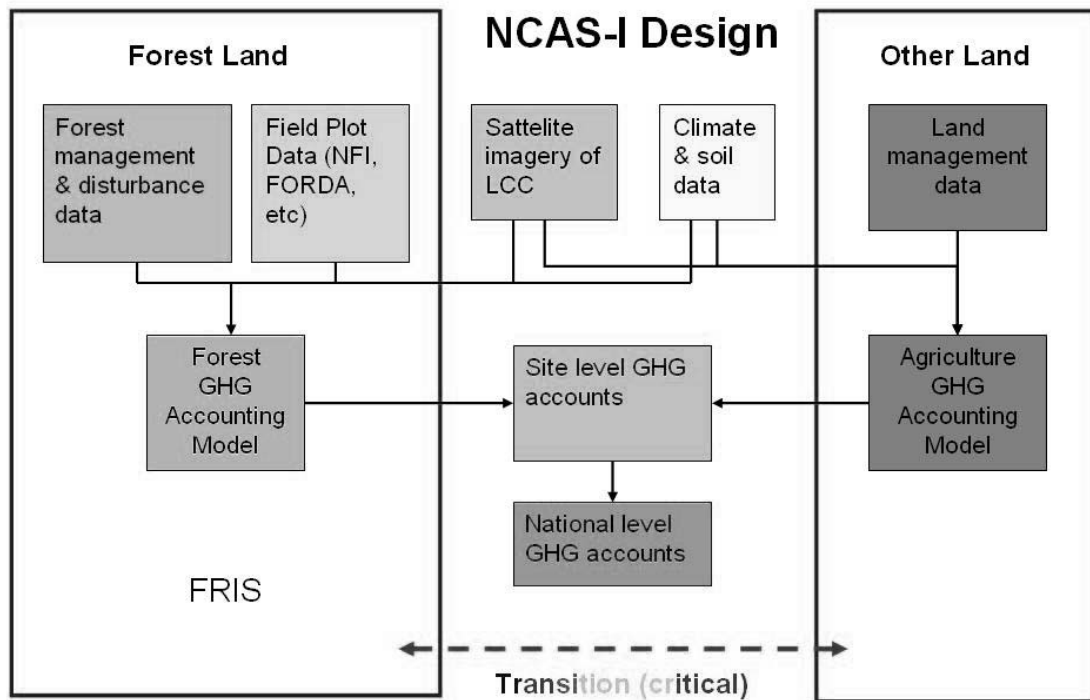
- 1) Remote sensing program that will provide time-series analysis of land cover change,
- 2) Ground based forest measurement program that will improve national forest inventory data and provide a basis for estimating carbon emissions from land use change,
- 3) Geo-database that will systematically store and archive spatial data,
- 4) Modeling program that can be used to provide estimates of forest growth, carbon sinks and CO₂ emissions resulting from deforestation,
- 5) Data sharing and exchange program that will distribute information in a transparent manner, and
- 6) Decision support system program that will ensure the dissemination of information generated by the FRIS is delivered to policy makers

The NCAS Indonesia (NCASI) can be considered as a highly integrated system that will compile information from Indonesia's forestry, agriculture and other land use as well as provide a robust method to profile emissions and its uptake from remotely sensed land cover change data, land use and management data, climate related and soil data, growth and biomass data, and spatial and temporal ecosystem modeling.

NCASI will offer a robust system on the accounting of land-based greenhouse gases emission by sources as well as the removals by sinks for both inside and outside forest lands; that will include estimation of emissions from forest management (e.g. harvesting), disturbance (e.g. forest fire), natural forest conversion to other uses (e.g. agriculture, estate crops or timber plantations), deforestation and forest degradation; and uptakes from afforestation, reforestation and other activities.

Majority of Indonesia's lands (approximately 70%) are under the category of forestland administered by the Ministry of Forestry – or state owned forestland -; therefore these lands are the major portion of national carbon accounting in the operational and reporting systems. To this end, FRIS should generate not only information on estimation of land based carbon emissions and uptakes, but also information on other forestry relevant aspects, such as biodiversity, logging operations, illegal logging, law enforcement operations and forest fire management.

Information from FRIS will be further assessed in NCASI. While FRIS generates information on designated forestland, that will include information on biodiversity, carbon stocks and sinks, forest fires and other information needed to implement sustainable forest management; NCASI generates information on all of Indonesia's lands, including non-forestland. The following diagram shows the integrated structure of FRIS and NCASI.



Currently, being the initial stage of development, FRIS activities are dedicated to support NCASI, that focusing on identifying and acquiring remotely sensed data such as satellite imageries, aerial photos, and other ancillary data necessary for establishing reference emissions level. Series of land sat images started from 1990s have been provided to support NCASI. Other satellite imageries such as ALOS Palsar, MODIS and other remotely sensed data will also be used to fill the gaps of data. However, extensive works on land sat interpretation as well as other data collection and analysis have yet to be done.

2. National Forest Inventory (NFI)

The NFI system was established in Indonesia in 1986. The system was designed to provide information on the location and extent of forest and land cover types, estimate volume and growth of each forest type and assess the state of forest areas and its biodiversity.

NFI has four main components, covering forest resources (status) assessment (FRA), forest resources (change) monitoring (FRM), geographic information system (GIS) and user involvement. Today, the main components have been clustered into:

- (a) Field data system with both FRA (temporary sample plots) and FRM (permanent sample plots) components;

- (b) Remote sensing system (visual interpretation and digital image processing) which also include both FRA (forest cover mapping) and FRM (analysis of multi date data) sub-components;
- (c) GIS which maintains national spatial data bases (administrative boundaries, forest cover, forest function, land suitability) in relation to relevant information produced by the field inventory and forest monitoring activities; and
- (d) NFI Information (Users) Service (NFIIS) which provide data/ information users on the types of information that could be generated or disseminated as well as on how to use the information. A set of permanent sample plots (2,735) were established in 1990 for collecting data and monitoring commercial volumes of trees and forest growth and other relevant data necessary for growth and yield prediction of commercial tree species.

In NFI, methods to determine forest cover and forest cover change with land sat data were also developed. The original analysis was executed manually by using a series of “scene”¹, but during the period of 1992 to 1997 was using digital remote sensing data. In the later stage (2000), the information was further updated and included data from 1999, 2000, and 2003 (updated data collected from 2002 to 2003). A three year monitoring system was also established.

3. Remote Sensing Approach

NFI has used different data sources, approaches and methods for information that were collected on early 1990s to 2003. As the consequence of using these varying approaches and methods, a lack of consistency had happened between the data sets and the information derived from the analysis of them.

In the new developed system, FRIS, a combination of active and passive remote sensing data (low, medium and high resolution) and methodologies will be acquired and used to provide historical forests—extent, condition and changes. These approaches would provide time series analysis of deforestation dating back to 1990 and wall to wall annual tree cover change maps. It would also strive to develop methodologies for identifying and monitoring forest degradation. Also, the approaches would support sustainable forest management by providing measures of temporal change in forest cover and condition, which then produce additional critical information about forest health, timber yields and the potential for forests to support biodiversity. These measures would also generate key inputs to models that estimate greenhouse gas emissions that at the end will allow Indonesia to put together Reference Emissions Level options based on historical analysis of land cover changes.

4. Ground Based Measurement Approach

A field inventory has been carried out in Indonesia to collect a range of data about forest condition, growth and biomass. The permanent sample plots, established in 1990, were re-measured in 1996 and 2002. Data that were collected, among others, are the following:

¹ Land sat images taken on the spot.

description of forest type, basal area and height, commercial bole height, disturbance history (fire, cyclone, harvesting, replanting), seedlings, saplings, soil description (including peat) to 50cm depth, color and stones, and coarse woody debris and volume.

While the field plots provide an excellent base for the FRIS, additional data will be required to be reported under sets of key criteria on the system before it could support sustainable forest management. These data include, among others: measures of forest biodiversity (to be defined), measures of forest health (e.g. damage from pests or diseases), timber production potential and additional soil information (e.g. depth, degradation, carbon content and water holding capacity).

Field observations will be also critical for the calibration and testing of remote sensed measures and other modeling approaches. The data obtained from ground base measurements could also be used in combination with other information (i.e. remote sensing information on forest cover change and allometric equations) in providing estimation of carbon emissions and removals from forests. In order to meet the requirements that are setting for different reporting and purposes as well as different level/scales; selected protocols are required to ensure consistent measurements are taken throughout the Indonesian archipelago.

COOPERATION AND CAPACITY BUILDING

Indonesia is currently applying process to develop forest resource information and national carbon accounting systems, where improvement of earlier activities and creation of new activities are ongoing or at the initial stage. Since 1985 extensive data collections have been carried out by the Ministry of Forestry (MoF), by using various remotely sensed data (Land sat MSS/TM/ ETM+, SPOT Vegetation, MODIS and other sources of data, as well as field plot data from more than 1,000 permanent plots which were established in 1993² and PSPs in concession areas and research forests. These data were derived from three periods of monitoring (1985-1997, 1997-2000, 2000-2005), in collaboration with South Dakota State University and Wageningen University.

This monitoring system analyzed the time series land-cover change in both forest and non-forest lands. Nevertheless, comprehensive and time series data on forest cover are not available yet; therefore additional data are needed, such as mapping exercises to facilitate better planning and forest management. These maps have to be created through considerable time and efforts, in particular on gathering information and carry out interpretation – e.g. archipelago wide land cover maps. In some cases, these maps do not have similar baseline data as the basis of the entire map, which may have considerable influence on the calculation of annual change.

² Source : NFI: Indonesia – FAO project

On the preparation of REDD schemes under the UNFCCC – as part of preparation for COP-13 negotiation, Indonesia -supported by UK, Australia, WB, and Germany- has conducted a comprehensive study on REDD schemes that include technical and methodological aspects. The study³ – coordinated by Ministry of Forestry - were carried by a combination of national and international experts and disseminated to stakeholders under Indonesia Forest Climate Alliance (IFCA). This study also identified the gaps on methodological aspects, possible improvement on the existing systems and other relevant issues that include institutional setting.

In addition to this study, through a bilateral cooperation with Australia, Indonesia is developing FRIS and NCASI system (as shown in the previous section of this document). The development and implementation of these systems would require sufficient capacities for human resources and institutions. Indonesia has identified as much as US \$ 16,395,000 is needed to further develop and execute the operational cost of FRIS and NCASI, which intended to be mobilize from international sources.

To this end, Indonesia recognizes the need to have high commitment on maintaining and improving these systems as well as the necessity of coordination and synergy between all relevant institutions and stakeholders at all levels. At this stage, the institutional capacity building is crucial to ensure information flow and regular updates. A broad range of capacity building are identified, among others, as the following: developing technical skills, including GIS/remote sensing analysis, database management, data analysis, web-based mapping, reporting and field inventories, designing and implementing systems, forest dynamics and greenhouse gas related modeling. In addition, FRIS and NCASI will be benefited from ongoing research on related areas.

In the view of Indonesia's readiness on REDD implementation; the following issues should be urgently addressed:

- 1) Establishment of reference emissions levels (REL) in accordance with international requirements/guidelines as well as suitable with national circumstances and relevant policies;
- 2) A comprehensive remote sensing methodology and ground based approach to monitor deforestation and forest degradation on a suitable periodical basis throughout the archipelago of Indonesia;
- 3) Methods to measure and monitor carbon stocks and its associated changes as well as potential emission from deforestation and forest degradation (including peatland);
- 4) Modeling approach to estimate potential GHG emissions from land use changes;
- 5) Methodologically relevant strategies to reduce deforestation and forest degradation, including approaches to tackle within country displacement of emissions.

³ *Reducing Emissions from Deforestation and Degradation in Indonesia (REDDI)* , IFCA, 2007

RELEVANT METHODOLOGICAL ISSUES: FACTORING OUT UNMANAGED AREAS AND EXTREME WEATHER EVENTS

1. Ungoverned Areas

A REDD country - based upon national circumstances as well as the avoidance of perverse incentives - at their options, may advise Other Parties that sharing their national borders for issues that could be considered as unmanaged or ungovernable areas, due to factors such as war, rebellions, geographic remoteness, to not include such lands in a REDD mechanism.

2. Extreme Weather Events and Natural Disasters

The Convention should only incorporate potential anthropogenic GHG emissions in conducting the REDD Mechanism. Therefore, greenhouse gas emissions as results from extreme weather events and natural disasters that would affect forest areas should not be included within any REDD Mechanism.

INDIGENOUS PEOPLE AND LOCAL COMMUNITY ISSUES

Indonesia recognizes the wisdom and traditional knowledge owned by indigenous people and local communities. Indonesia underline the importance of addressing roles, rights, and clear benefits of REDD implementation for such communities as well as their involvement and participations in REDD activities, including participation of these communities on the development of methodologically relevant aspects.

PAPER NO. 6: PANAMA, COLOMBIA AND COSTA RICA

Submission by Panama, Colombia and Costa Rica

- Reducing emissions from deforestation in developing countries: approaches to stimulate action (SBSTA)
 - Information on experiences and views, and to provide country-specific information where possible, on needs for technical and institutional capacity-building and cooperation in, inter alia, the implementation of methodologies for estimating and monitoring changes in forest cover and associated carbon stocks and greenhouse gas emissions, incremental changes due to sustainable management of forests, reduction of emissions from deforestation and forest degradation, national and sub national monitoring and reporting systems, and methodologies for forest inventories, ground-based and remote-sensing approaches

The SBSTA invited Parties to submit to the secretariat, by 15 February 2009, information on their experiences and views, and to provide country-specific information where possible, on needs for technical and institutional capacity-building and cooperation in, inter alia, the implementation of methodologies for estimating and monitoring changes in forest cover and associated carbon stocks and greenhouse gas emissions, incremental changes due to sustainable management of forests, reduction of emissions from deforestation and forest degradation, national and sub national monitoring and reporting systems, and methodologies for forest inventories, ground-based and remote-sensing approaches. It requested the secretariat to compile these submissions for consideration at its thirtieth session. (See FCCC/SBSTA/2008/L.23, paragraph 10)

We believe that technical, institutional and local support should be provided in order to allow Parties to identify and develop the financial instruments and adequate mechanisms to design and implement REDD activities; strengthen institutional frameworks and social capacity required for this purpose; and facilitate the transfer of relevant technologies. Support for these activities should be measurable, reportable and verifiable, and REDD activities should be developed under the principle of environmental integrity.

We have identified needs for technical and institutional capacity-building and cooperation in, inter alia:

1. *The implementation of methodologies for estimating and monitoring changes in forest cover and associated carbon stocks and greenhouse gas emissions:*
 - In terms of methodology development, a top-down approach is needed, that is, methodologies would be proposed by the IPCC for different options of scale. However, bottom-up approaches must be allowed so that countries and project developers can propose their own methodologies to be approved by a body under the UNFCCC. In any case, there is a need for capacity-building to develop these methodologies, and to strengthen the national capacities required to implement them. Moreover, capacity building in ground level assessment is needed.

- Capacity-building specifically oriented to include indigenous peoples and local communities so these stakeholders can be efficiently engaged in the design and implementation of REDD methodologies (i.e. monitoring and the measurement of carbon stocks).
- Regarding inventories and monitoring, capacity-building needs have been identified in the following areas:
 - Generation of important activity data for inventory development, including guaranteed access to this information;
 - generation and/or access to data on forest cover and land use change; and
 - remote sensing and ground-based inventories.
- Promote cooperation to facilitate better access and technology transfer in terms of quality forest cover data and information on carbon content by forest ecosystem type.
- Capacity-building to generate, access, interpret and assess remotely sensed imagery and data on deforestation and degradation.
- Capacity-building to identify and assess forest degradation.
- Regarding methodologies to estimate emissions, capacity building is required to:
 - Apply the relevant IPCC Inventory Guidance;
 - improve data on emission factors for the LULUCF sector, given that default emission factors provided by the IPCC Guidelines do not adequately reflect national circumstances; and
 - enable local communities to monitor and assess the changes in forest biomass/carbon stocks.

2. *Incremental changes due to sustainable management of forests:*

(Refer to item 1).

Reduction of emissions from deforestation and forest degradation:

- Capacity-building needs were identified with respect to the following issues:
 - Identification of direct and indirect drivers of deforestation by economic sector.
 - Estimation and analysis of land-use and land-use change opportunity costs.
 - Design and implementation of alternative productive activities at a community level.
 - REDD information and consultation processes.
 - Design of national REDD strategy and sub national frameworks.
 - Implementation of REDD measures as defined by each country.
 - REDD data quality assurance and control, archiving and reporting
 - Development of REDD payment structures and distribution mechanisms, according to national REDD strategies and sub national frameworks.

3. *National and sub national monitoring and reporting systems:*

- Support should be provided in:
 - Institutional capacity-building to establish national emission reductions tracking system and registry.
 - Capacity-building for governments to enable them to provide assistance in the set-up of baseline and monitoring systems at the project level.

4. *Methodologies for forest inventories, ground-based and remote-sensing approaches.*

(Refer to item 1).

Submission of the Republic of Suriname in accordance with the request of SBSTA 29, to submit to the Secretariat of the United Nations Framework Convention on Climate Change, its technical and institutional capacity needs regarding REDD readiness.

1. Introduction

Suriname has a vast reservoir of carbon with conservative estimations of approximately 10 gigatonnes (Gt) stored in its above-ground biomass¹. Forest covers about 90% or 14.8 million ha of the total land area. Suriname has historically low levels of deforestation. Deforestation has been limited to 3% of original forest lands (since 1650), i.e. on average less than 0.1% deforestation per year.

The Government of Suriname owns close to 97% of all forest lands.

The population density is low, approximately 500,000 inhabitants on 164,000 km². The largest part of the total population lives along the coastal strip of the country. Approximately 10% of the total population is spread over small towns in the districts and in tribal communities along rivers in the interior.

Suriname can contribute to global efforts to reduce emissions resulting from deforestation and forest degradation. A global REDD policy however, can only be successful if international displacement of emissions is prevented. In this respect it is important to include forest conservation, carbon stock maintenance and improvement, as well as, sustainable forest management in any future REDD mechanism.

Suriname's REDD policy is geared towards:

- Reduction of GHG's from deforestation and degradation.
- Maintenance, protection and enhancement of existing carbon reservoirs.
- Forest conservation
- Establishment of carbon sinks.
- Continued application of sustainable forest management.

In order to comply with a future REDD mechanism, Suriname will be required to set up a comprehensive monitoring system to quantify both above ground as well as soil carbon that is sequestered. Furthermore, Suriname will have to establish a emissions reference scenario and reference levels for its carbon stock, and quantify the reduction of carbon emissions from deforestation and forest degradation.

¹ First National Communication under the UNFCCC 2004

2. Responsible institutes for forest inventories, monitoring and reporting of carbon stock changes

The direct relevant ministries with regard to the mandate area of UNFCCC are the Ministry of Labor, Technological Development and Environment (UNFCCC focal point, key role: monitoring implementation of obligations under UNFCCC and reporting to the Secretariat), the Ministry of Physical Planning, Land and Forest Management (key role: forest inventory and forest monitoring) and the Ministry of Public Works (Meteorological Service, key role: monitoring of atmospheric gasses).

The Ministry of Labor, Technological Development and Environment (ATM), and its technical working arm the **National Institute for Environment and Development in Suriname (NIMOS)**, is responsible for the preparation of environmental policy, development of environmental legislation, advising on environmental impact studies and monitoring obligations related to international environmental treaties which are ratified by Suriname.

The Ministry of Physical Planning, Land and Forest Management (RGB) and its working arms **The Forest Service (LBB)**, **The Foundation for Forest Management and Production Control (SBB)** and **The Jan Starke Training and Recreation Centre (JSOOC)** is responsible for land and forest management and for issuing timber cutting rights such as timber concessions and permits to individuals, companies and communities for forest exploitation and timber and non timber forest products production. This Ministry is also responsible to take inventory of and to monitor carbon stocks.

The Forest Service (LBB) is officially in charge of the management of all forests in the widest sense of the word, with the specific task of “sustainable management of the forests for the benefit of the nation”. LBB is executing its mandate in the nature reserves through the Nature Conservation Division (NB) and the Foundation for Nature Conservation (Stinasu). Stinasu is a foundation which was established to assist NB in attracting funds especially for tourism development in the nature reserves. The nature reserves cover about 14% of the land area of Suriname.

In executing their mandates both NB and Stinasu implement law enforcement through respectively Forest Guards and Game wardens.

Part of the LBB mandate is entrusted to the **Foundation for Forest Management and Production Control (SBB)**, established in 1998, which is in charge of the management of production forests and the recording of production statistics. National forest inventories and monitoring of forest cover is the responsibility of LBB and SBB. SBB manages all forests in Suriname except in the nature reserves. This is approximately 88% of the land area of Suriname except the converted areas (agriculture, mining and urban areas). In executing its delegated mandate, SBB implements law enforcement through Forest Guards. SBB is also responsible for measuring carbon stocks. SBB is also the focal point for UNFF. Discussions are ongoing to establish a new authority that will be entrusted with the tasks of both LBB and SBB.

The **Jan Starke Training and Recreation Centre (JSOOC)** is a foundation which is entrusted with the duty to train professionals for the forestry sector. It is an institute for vocational training.

The Ministry is currently implementing a Geographical Land and Information System (GLIS) aimed at digitalizing the land records and cadastre of the urban areas.

Relevant Training and Research Institutes

All forest related training and research facilities are publicly funded.

Training and research institutes are:

- **The Anton de Kom University of Suriname (AdeKUS).** The AdeKUS provides an academic training in Forestry, on a BSc. level. The amount of graduates is very low in comparison to what is needed in the forest sector. The university is in the process of innovating its curriculum on new innovative issues, such as Payments for Environmental Services and Carbon Credits. It is expected that the new curriculum will be implemented in 2010-2011. A new initiative of the university is a 2-year MSc. program on Sustainable Management of Natural Resources, which will start in November 2009.
- **Centre for Agricultural Research in Suriname (CELOS).** CELOS is a training and research institute of the AdeKUS. Its department Natural Resources and Environmental Assessment (NARENA) is a training and research department in environmental-related issues.
- **NATIN.** This technical school provides training on an intermediate level.

NGO's which support sustainable development of the forestry sector

World Wildlife Fund (WWF). Conservation International – Suriname (CI-S)

Tropenbos Suriname and Suriname Conservation Foundation (SCF) – a national NGO.

3. Institutional bottlenecks and needs

A full forest sector scan on capacity needs assessment was done in 2004 by Tropenbos. Main constraint as registered was lack of qualitative expertise in the area of innovative forest management.

This chapter is limited to the institutions that are currently earmarked to play a role in carbon stock measurements.

These are:

At the Ministry of RGB: SBB.

At the Ministry of ATM: the Environmental Section and NIMOS.

At the Ministry of Public Works: The Meteorological Service.

The research institution CELOS/NARENA.

The private sector.

SBB

SBB has limited knowledge on new innovative developments and new technologies. Neither does SBB have the manpower to follow these developments adequately. An expert is urgently needed who can advice on what kind of technology will suit the requirements of Suriname.

Bottlenecks are thus in the field of human resources and equipment. Actual experience is that SBB is only able in concentrating on monitoring production forests. Specific knowledge is needed on how to measure and monitor biomass and carbon stocks. With regard to the use of

satellite data there are not enough employees to go to the field stations to calibrate the information and to translate these images. At present there are 3 employees of SBB who if trained, will be able to execute carbon stock taking. A rough estimate of additional required capacity to perform a full fledged stocktaking is:

- * 3 persons trained at university level.
- * 6 persons with specific knowledge of flora.
- * 12 field workers.
- * 9 administrative assistants.

The GIS software which is used by SBB is not suitable for monitoring carbon stocks. It can only be used to measure forest classes, deforestation and excessive degradation. Basic knowledge of GIS is present as staff was trained. But even the already trained personnel need to improve their skills in the areas of data management and GIS analysis. Specific knowledge is needed for the third dimensional GPS.

ATM/Environmental Section and NIMOS

ATM and NIMOS have limited human resource capacity. Day-to-day activities are time consuming, resulting in less time to keep up with new developments and technology. Generally, there is not enough financing available to invest in in-depth knowhow. From time to time training possibilities, offered by other institutions, are used. There is a need to increase the numbers of academic personnel.

Meteorological Service

The Meteorological Service has no expertise in the fields of satellite images related to climate change. The main bottleneck is that there is insufficient human resources capacity. There is also a lack of incentives for improving research capacity. There is a need to increase the numbers of academic personnel.

The research institute CELOS/NARENA

The main bottleneck is that there is insufficient human resources capacity and lack of technical instruments. There is a need to increase the numbers of academic personnel.

The private sector

Part of the area that is under control of SBB is on short term lease granted to timber concession holders or to tribal communities. Private sector organizations and representatives of community forests are well involved in discussions but lack human resources capacity, finance and technical instruments to play a role in carbon stock taking and monitoring. They need however to be trained to have a well developed awareness on this window of opportunity.

3. Technical bottlenecks and needs

The unique configuration of deforestation in Suriname requires a system that can also detect scattered small-scale forest cover loss to quantify the cumulative impact at the national level. The characteristically low harvest intensity of logging (8-15 m³ per ha) and the prevalence of small scale and dispersed gold mining activities demand a different approach than from that used by countries with dramatic and well-defined agricultural frontiers. The limited utility of optical imagery in cloudy regions essentially precludes this technology as a viable option for Suriname. The ability of any remote sensing technology to detect low intensity forest clearings is as yet

limited. It will be necessary to send a team of topographers with GPS devices to the forest once a year. This team can improve the mapping of the extension of all skidder trails and felling activities in the areas where logging is ongoing.

The GPS ground data can be further used to model and estimate forest degradation; the GPS team will not only map the extent of new logging roads and skidder trails, but at localities selected via a stratified random procedure (stratified to make sure it is an area being logged, but randomly within this area to avoid bias) to more precisely map individual tree falls and skidder trails. This more precise information then will be extrapolated over the logged area. This method of estimating forest degradation following logging was developed by Winrock Int. for the Noel Kempff Mercado Climate Action Project (Bolivia) for areas experiencing selective logging that standard remote sensing technologies cannot detect.

It is important to note that radar data is saturated at biomass levels above 100 tons per hectare, which will be sufficient to detect forest clearing, logging roads, and large clearings, but not smaller amounts that is why it is essential to include the GPS ground truth component.

What is required is a time series of classified imagery that can be monitored and analyzed regularly supplemented by data derived from ground based mobile GPS devices and forest inventory assessment.

4. Suriname's experiences and views

Limited forest inventory, mapping, and remote sensing analyses are done by SBB and CELOS and there is a need for improved institutional capacity to carry out this work. Although forest inventories are periodically carried out in limited areas (principally in concession areas), there is currently no continuous and systematic national forest inventory system in place to directly monitor forest biomass or to accurately model forest degradation using surrogate information, such as timber volumes or spatially explicit databases that show annual logging, agricultural and mining activities. Monitoring and research require well-equipped and staffed institutions, which is at the moment not the case in Suriname. It is also a question with some stakeholders in the forest sector whether existing institutions must be the one's to carry out activities in the new innovative areas such as carbon credits or if new institutes should be established to fulfill these tasks.

Previous national forest inventories lacked uniformity in collected data, hence there is a need to institute a systematic, standardized approach.

This process would entail training staff of SBB and other relevant agencies, and the capturing of forest data, as well as processing and analysis of this data. Data from remote sensing, forest inventories etc. would also be incorporated in this analysis.

There is currently no time series of classified remote sensing data maintained to monitor changes in the forest cover. Tracking of permitted land clearing activities through the compliance process is insufficient due to the magnitude and dispersal of un-authorized activities and incomplete monitoring for compliance.

The technical capacity for dealing with remotely sensed information must be built and strengthened, although as noted in the previous sections, there are possibilities for training in forest monitoring with both optical and radar data.

Suriname's rapidly changing development trajectory further demands an objective methodology to establish a reference case scenario that reflects its future and not its past. Simple historic base-lines are not adequate, because they characterize a different economic and social dynamic that led to low rates of deforestation; Suriname is now embarking on a more dynamic development trajectory and a deliberate strategy to increase the exploitation of its natural resources including expansion of agriculture. Therefore, Suriname's reference scenario must be based on a modeled future economy and the projected emissions that would occur under a business as usual assumption that would normally accompany changes in land-use allocations, infrastructure investments, demographic and socio-economic trends, policy and enforcement, and any other causal or correlative factors that can be used to infer forest cover change with known levels of uncertainty.
