PROCEEDINGS

OF

THE INTERNATIONAL FORUM ON ENHANCEMENT OF JAPAN'S PRIVATE SECTOR'S OVERSEAS RE-AFFORESTATION COOPERATION - Beyond COP6 of the United Nations Framework Convention on Climate Change -

1st and 2nd February, 2001 At the International Conderence Room, National Olympics Memorial Youth Center, Yoyogi, Tokyo, Japan

Japan International Forestry Promotion & Cooperation Center

(JIFPRO)

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1 Agenda of the International Forum on Enhancement of Japan's Private Sector's Overseas Re-Afforestation Cooperation

Beyond COP6 of

the United Nations Framework Convention on Climate Change

1st Day, 1st February, 2001(Thu)

Velcome Address by Mr.Tomohide Akiyama, Board Chairman of
ПFPRO
Velcome Address by Mr. Tetsuo Kato, Deputy Director General,
Forestry Agency, Ministry of Agriculture, Forestry and Fisheries,
he Government of Japan
Nomination of Chairperson of the Forum, Dr.Fujio Kobayashi, Vice
resident, The Japan Forestry Association
)pening remarks by Dr. Kobayashi
Key-Note Address by Dr.Untung Iskandar, Director General,
orestry Research and Development Agency, Ministry of Forestry,
ndonesia
Enhancement of Reforestation and Land Rehabilitation in the
ropics'
offee Break
ntroduction of discussions of COP6 at the Hague, with special
mphasis on carbon sink projects in relation to CDM
y Mr. Mikihiro Inoue, Senior Advisor, Forestry Agency, Japan
unch Break
resentation by Dr. Kyaw Tint, Director General, Forest
epartment, Ministry of Forestry, Myanmar
Status of Forestry Activities in Myanmar with Some Reference to
HGs Mitigation'

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13:40 Presentation by Dr. Nguyen Ngoc Binh, Director General, Department for Forestry development, Ministry of Agriculture and Rural Development, Vietnam

'The National Five Million Hectares Reforestation Programme'

- 14:10 Presentation by Dr. Plodprasop Suraswadi, Director General, Royal
 Forest Department, Thailand
 ' Thailand's Position on Enhancing Re-Afforestation in the country with
 - Some Reference to the Discussions at COP6 '
- 14:40 Coffee Break
- 15:00 Presentation by Dr. Mark Stevens, Assistant Manager, International Greenhouse Partnerships Office, Department of industry, Science and Resources, Australia

'International Climate Change Partnerships'

15:30 Presentation by Sr. Claudio Forner, Advisor, Ministerio del Medio Ambiente, Colombia

' Special Considerations regarding the Expiring CERs Proposal '

- 16:00 Questions from the floor
- 17:00-19:00 Reception

2nd Day, 2nd February, 2001

9:00AM- 10:20 AM	Panel Discussions
Chairperson:	Dr. Fujio Kobayashi
Panelists:	Sr. Claudio Forner
	Dr. Ir. Ngaloken Gintings, Director,
	Forest Products Research Center, Indonesia
	Dr. San Win, Forest Research Institute, Myanmar
	Dr. Pham Quang Minh, Head of Silviculture Division,
	Department for Forestry Development, Vietnam
	Mr. Pravit Chittachumunonk, Director of Silviculture
	Research Division, Royal Forest Department, Thailand
	Dr. Mark Stevens
	Dr. Masahiro Amano, Forestry and Forest Products
	Research Institute, Japan

10:30AM- 10:50AM	1 Coffee Break
10:50AM	Panel Discussion (Continues)
12:20	Comments and questions from the floor
12:50	Chairperson's concluding remarks by Dr. Fujio Kobayashi
13:10	Close of the two day session of the Forum

2 Welcome Address by Mr. Tomohide Akiyama, Board Chairman of JIFPRO

Good morning, distinguished guests, ladies and gentlemen! I am Akiyama, Chairman of the Board of Directors of Japan International Forestry Promotion & Cooperation Center, JIFPRO.

I am very happy today to have many participants in this Forum.

I would like to express my deepest gratitude to Dr. Untung Iskandar for accepting to make the key-note address for this forum and I am very grateful for the participation by the distinguished high officials from foreign countries.

On this occasion, I would like to introduce to you the major activities of JIFPRO. We are a Japanese foundation, which specializes in promoting forestry international cooperation. More specifically, JIFPRO supports other Japanese NGOs forestry related international activities, tries to nurture competent personnel, promotes Japanese NGOs' and other private sector's overseas re-afforestation cooperation.

conducts various research activities, and conducts public awareness raisingactivities.

From the Japanese Government side, the Forestry Agency often gives us advice and provide us with financial assistance whenever feasible. This forum is one of the examples of JIFPRO activities with such Government support.

Today, Mr. Tetsuo Kato, Deputy Director General of the Forestry Agency, is here with us together with other officials and I am especially grateful for that.

As all the participants are well aware, global environment is worsening and global warming is advancing.

I am convinced that the important task for us in the 21st century is to manage forests properly in sustainable way. For that, international cooperation is indispensable. Let us work together and let us make further efforts to achieve sustainable management of the world's forests.

The role of forests and re-afforestation has generally been recognized in the United Nations Framework Convention on Climate Change and in the Kyoto Protocol to it. However, COP6 in the Hague in November 2000 was adjourned without taking any decisions. Hence, no decision was taken for the Kyoto Mechanism of the Protocol, including the matter of concern of the Clean Development Mechanism(CDM) should include carbon sink projects like re-afforestation projects or not.

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I believe that the inclusion of carbon sink projects in CDM would offer one of the effective ways to combat global warming and would definitely enhance global forest conservation. I understand that there are several problems in inclusion of sink projects in CDM but I believe that they are solvable ones if we work hard.

I do hope that the wise decision would be taken at the second part of COP 6 to be held sometime later this year.

We have the same goal of conserving the world forests but we have of course diversified views.

I think it is very important for us to express ourselves openly and cordially at this Forum. That would facilitate us to move on.

In conclusion, I sincerely hope for your kind cooperation for the success of the Forum.

Thank you very much.

Welcome Address by Mr. Tetsuo Kato, Deputy Director General, Forestry Agency, Ministry of Agriculture, Forestry and Fisheries, the Government of Japan

Good morning, distinguished guests, ladies and gentlemen!

I am Kato, Deputy Director General of the Forestry Agency, the Government of Japan. It is my honour to have this opportunity to make my welcome speech on behalf of the Forestry Agency at this International Forum.

This Forum, as I understand, aims at sharing the results of the discussions of the Hague Session of COP6 of the United Nations Framework Convention on Climate Change, express our views freely on what we have done and on what we should do for enhancing re-afforestation activities in each country and for enhancing private sector's re-afforestation cooperation, with emphasis on Japan's role in it.

The Forestry Agency has been very active in international forestry cooperation; nearly 100 Forestry Agency officials are working as experts of Japan International Cooperation Agency(JICA) in foreign countries, especially in tropical countries; we have been instrumental for Japanese Government to provide financial contribution to ITTO and FAO; and we have been instrumental for the Japanese Government to contribute financially and in terms of offering expertise to various international activities, aiming at achieving sustainable forest management globally, like the Inter-Governmental Forum on Forestry(IFF).

I firmly believe the importance of realizing integrated value of forest for national land conservation, water resource enrichment, recreational use, and timber and other forest products supply, would definitely become larger for our present and future society. Other factors of increasing importance are the forest role of CO2 sink and effective utilization of timber, sustainable resource which can be recycled, to mitigate global warming. Under the circumstance, we have conducted thorough review of the forestry policy and has decided to reorient the forestry policy to make full play of the multilateral role of forests and make full exertion of recycle use of forest resource.

It is regrettable that COP6 at the Hague had not brought about any decisions; I understand that one of the reasons for this was that there were wide range of difference in the views of parties, concerning the treatment of carbon sink projects in the Clean Development Mechanism(CDM) of the Kyoto Protocol.

Japanese Government's firm position is that we should fully appreciate the important role of forests in mitigating global warming, forest's carbon sink role should be fully appreciated, carbon sink projects like re-afforestation projects should be included in CDM and credits should be awarded for that so that re-afforestation cooperation projects between Annex I countries and Non-Annex I countries would be further promoted.

For this Forum, high officials in forestry administration and related fields from 6 countries could come over to Japan, and we have also wide range of participants from all over Japan.

I believe that discussion at this Forum would be very useful one and I sincerely hope every participant would acquire some useful information from this Forum and the Forum would eventually facilitate Japan's private sector's re-afoorestation contribution to other countries.

Thank you very much.

Chairperson's Opening Remarks by Dr. Fujio Kobayashi, Vice President, the Japan Forestry Association

I am Fujio Kobayashi who has just been nominated as Chairperson of this Forum. I would like to make a brief speech as Chairperson.

It is my great honour to be nominated as Chairperson of this important Forum. The Chairpersonship is a very heavy duty for me and I would make my best effort for the success of the Forum, counting on full cooperation by those who would make presentations ,and by the floor colleagues.

The Forum originally meant the Roman public open square, where Roman citizens could express their views freely. At this Forum too, it is essential that participants express their views freely. I would like to point out that what would be expressed and what would be discussed here would not accompany any obligations with them.

The Forum's sub-theme refers to COP6 of the United Nations Framework Convention on Climate Change. More specifically, it relates to CDM and Joint Implementation(JI) of the Kyoto Mechanism of the Kyoto Protocol to the Convention. As the participants are well aware, one of the major discussion points at COP6 at the Hague in November, 2000 was whether CDM should include carbon sink projects like re-afforestation projects.

Although unfortunately COP6 was adjourned without making any decisions, I do hope wise decisions would eventually be taken at the second part of COP6 to be held this year. I do hope that Kyoto Mechanism, especially CDM and JI, would enhance re-afforestation cooperation among countries and would enhance Japan's private sector's re-afforestation projects abroad.

The important task of this Forum is to provide participants with the precise information on the current situation and with the proper basis to move on further. Again, I beg your full cooperation for the success of the Forum.

There will be a chance that floor participants to express themselves; whenever the floor participants are given chance to speak, please identify yourself first, followed by the comments.

Thank you very much.

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5 Key-Note Address by Dr. Untung Iskandar, Director General, Forestry Research and Development Agency, Ministry of Forestry, Indonesia

Dr. Untung Iskandar commenced his presentation by thanking Mr. Tomohide Akiyama,Board Chairman of JIFPRO, Mr.Tetsuo Kato, Deputy Director General of the Forestry Agency, Dr. Fujio Kobayashi, Vice President of the Japan Forestry Association and the Chairperson of this Forum, and all the participants in this Forum for having the opportunity to present his key-note address.

Dr. Untung Iskandar's key-note address was delivered along the line with the attached Forum Paper 1:

Firstly, such difficult condition of Indonesian forests and forestry, especially after 1997 Asian economic crisis ,as forest destruction by fires, illegal cutting, and turning forests into oil palm plantations. Dr. Untung Iskandar touched upon the over-capacity of wood industry of Indonesia against the domestic timber supply capability.

Secondly, the importance of re-afforestation and regreening for future timber supply and for better environment, sustainable water supply, preventing soil erosion, and so on was explained.

Thirdly, the address emphasized the importance of securing high quality tree seeds and various efforts on it was introduced.

Fourthly, the natural forest conservation efforts, sometimes involving cross-border joint efforts with Malaysia, were introduced.

Fifthly, the effects of recently introduced decenralization in Indonesia on re-afforestation projects were explained.

Sixthly, emphasis was laid on the essential element of community involvement in re-afforestation projects was explained.

Dr. Untung Iskandar mentioned that it was unfortunate that no decision was taken at COP6 of UNFCCC in the Hague in November, 2000 and said that the carbon sink role of re-afforestation would introduce new scheme in the relation between it and industry. Dr. Iskandar hoped that the wise decision would be taken internationally soon on this matter. Possible AIJ projects by JICA and Japan's private sector was introduced, too. Dr. Untung Iskandar in conclusion said that although his address referred mainly to the matters particular to Indonesia, there were various similarities in the tropical

FORUM PAPER 1

ENHANCEMENT OF REFORESTATION AND LAND REHABILITATION IN THE TROPICS A KEYNOTE SPEECH BY DR. UNTUNG ISKANDAR¹ AT THE INTERNATIONAL FORUM ON ENHANCEMENT OF JAPAN'S PRIVATE SECTOR'S OVERSEAS RE-AFFORESTATION COOPERATION²

FEBRUARY 1-2, 2001

Honorable Mr. Tomohide Akiyama, Chairman of the Board of Director, JIFPRO Honorable Mr. Tetsuo Kato, Deputy Director General of Forestry Agency Honorable Dr. Fujio Kobayashi, Vice President, the Japan Forestry Association Distinguished Officers of JIFPRO Distinguished Participants,

Ladies and Gentleman,

In the outset, allow me to express my appreciation and my great pleasure to be invited by JIFPRO to attend this very respectable meeting and even to deliver a keynote address. Of course, every country undergoes vicissitudes and eventually during the down era, the assistance from others is highly valued. My personal feeling is that despite the cold winter, I always feel comfortably warm in Japan, as the people are very hospitable. Personally, I am very happy to be here and to participate in the discussions to come.

Introduction

The economic crises that started in the middle of 1997 also have some impacts on the forestry sector in Indonesia. The crises intensified efforts to convert natural forestland into palm oil plantation. They did that by burning the remaining forest stands. The aftermath has been overwhelming. World Bank³ reported that the total area burned was 9,7 million hectares, of which 4,8 hectares were montane forests (100.000 hectares), 3,2 million hectares lowland forests, 1,5 million hectares swamp and peat forest and 186.000 hectares timber plantation. Kalimantan suffered about 6,5 million hectares burning, of which 2,4 million hectares were lowland forest.

The crises also brought about unprecedented destruction of forest due to the efforts to satisfy the need of raw materials for timber based industry. The industry has been accused for overcapacity, as compared to the ability of the forest to provide for sustainable flow of raw materials. Simply put, the demand for logs was around 48,9 million cubic meters to be processed for export, while the sustainable supply was around 21,4 million cubic meters. These statistics disregards the demand for domestic consumption for construction and fuel woods. Illegal logging has satisfied the imbalance between demand and supply, which is about 27,5 million cubic meters. The data from the World Bank indicated the annual rate of deforestation (namely the permanent loss of forest cover) was between 630.000 hectares to 2,0 million hectares. The figure from FAO was about 1,3 million hectares, while World Bank put a somewhat conservative figure of 1,7 million hectares, for the period between 1985 and 1998. The deforestation was in the form of over cutting, damaged

¹ Director General of Forestry Research and Development Agency (FORDA) of the Republic of Indonesia.

² Organized by Japan International Forestry Promotion And Cooperation Center (JIFPRO).

³ Forest Policy Dialog in Indonesia, 1998-2000: Results, Outlook and Lessons Learned.

residual trees due to incorrect logging practice and, logging outside the approved logging blocks. Illegal logging and encroachment of lands to be planted with cash crops, or for settlements, aggravated the problem.

The result of such situation was reflected by the report of the Ministry. The data published by Badan Planologi⁴ showed the destructed forest was 11,7 million hectares out of 41,2 million hectares of production forest. The remaining primary production forest was 18,4 million hectares. Kalimantan forest was damaged the most, registering 6,2 million hectares. Protection forest and conservation area were also illegally logged. This affected 3,6 million hectares of protection forests and 2,9 million hectares of conservation areas. Those data are only provisional, since not all areas are calculated. The Ministry of Forestry registered a forest cover of about 119,7 million hectares in 1985 and 99 million hectares in 1997, which means that annual reduction was 1,7 million hectares.

The Challenge

From the data, it is apparent that the challenge of forest management in the new century would be to rehabilitate the degraded forests areas and to replant the deforested or, barren land areas. Forest rehabilitation will take place as enrichment planting in the degraded forest areas and in the poorly stocked seedlings and saplings. Establishing forest plantation may be the choice for rehabilitating deforested areas. The activity is called the reforestation if done on in the degraded forest areas. Forest plantation could also be developed on formerly non-forest areas, including former-mine areas. This is called afforestation. The main objective of establishing forest plantation is still economic, namely to provide for future timber supply, while the secondary objective would be to create services from the tree community, such as better environment, sustainability of water supply and reduction of soil erosion. Gone were the days of exploiting abundant timber from natural tropical forest. The further action from reduced supply of cheap raw materials would be to restructure and downsize industry that could utilize smaller diameter timber from plantation forests and mix them with that from the remaining natural forests, if any. The timber from natural forest will only available if the government permits further extraction from the remaining natural forest. It that does not happen, the industry simply will have to be satisfied by timber from plantation forests and from external sources. Even the industry may resort to timber import to satisfy the demand of the consumers. In short, the industry has to transform itself to maintain its competitiveness in the world market. Gone also were the days of market dominance of plywood from natural timber. It is an opportunity to create secondary processed wood industry, to satisfy different markets.

Therefore, land and forest rehabilitation and the establishment of forest plantation will determine new era of resource management. First, the sector would need to procure for a continuing supply of high quality seeds whether they are from internal or external sources. Early on, the forestry sector will have to identify the remaining seed production areas and secure them from illegal logging or fire. Such action should be led by the Ministry, or, the forestry agency at the provincial level. When the areas have been identified and secured, next action would be to identify and secure superior trees to produce seeds. Following that, the collection, selection, examination, treatment and transport handling of seeds should take place in an efficient way to prevent further destruction. The further action, if possible, would be to certify them based on their quality. To

⁴ Badan Planologi Kehutanan dan Perkebunan. 2000. Rekalkulasi Areal Hutan Produksi, Hutan Lindung dan Kawasan Konservasi. Badan Planologi is the Macro Planning Unit of the Ministry of Forestry.

enable doing so, the management should determine the system to protect seed production areas, to secure the areas, to select and to certify the seeds. The management should also produce methods for seed collection, selection, treatment and handling.

In the absence of genetic improvement, high quality seed stands should be established based on the existing superior seed trees. A continuous stand examination and seed collection to assure the release of superior seeds should take place since the rehabilitation and establishment of forest plantation will require such seeds. The consumers have to be assured that they receive only high quality seeds to produce high yield stands. In conjunction with the availability of high quality seeds, better nursery practices and field planting of the seedlings also determined the success of plantation forestry and forest rehabilitation. Therefore, the forestry public sector should develop manuals for nursery and plantation operations. These manuals will assist those who are willing to invest on these activities.

The above-mentioned actions are based on the physical appearance of the trees, which may be genetically deficient. Genetic improvement should be the second action that should take place, to improve the seeds quality. In contrast to previous actions, genetic improvement works from the inside of the plant, namely the hereditary trait, which is determined by DNA and other molecular properties. The genetic improvement could significantly improve the seed quality by eliminating the unwanted traits (such as crooked growth or low production of gums) and enhance the superior quality. In the absence of adequate quantity of seeds, the required action is to produce high quantity seedlings by way of vegetative propagation. Since molecular genetics is relatively new and advanced science, the developing country may resort to conventional tree breeding. However, as many believe that tropical forests constitute the lung of the earth, and their very existence have to be safeguarded, therefore cooperation in molecular genetics may be explored and possibly expanded.

Aside from rehabilitation and establishing plantation forests, a third action should take place, i.e. conservation, be it conservation of ecosystem by way of good management of national parks and protected areas and conservation of species. Conservation on those characters will keep the existing genetic resources available for the current as well as future activities. To be conserved are the remaining production forests and the existing conservation areas and protection forests. To do so, a complete ban on logging in the remaining production forests will effectively boost the conservation areas. The ban will indicate that any logs that are being traded or processed, as long as they come form natural forests, are illegal. Logs from plantation forest certainly have different physical appearance from those from natural forests. In addition, logs from plantation forest will have different scheme of management, such as the timber track requirements.

The Action

Currently, Indonesia is cooperating with international agencies and donors to carry out those programs. Indonesia is working on ex-situ conservation of Shorea leprosula and Lophopetalum multinervium, under funding by International Tropical Timber Organization (ITTO). Identifying specific genetic resource areas is among the project's activities. Next, small-scale plantations are to be established, by planting seedling of those species. To keep the good traits of the parent trees. the seedling were prepared by vegetative propagation. The second project worth mentioning is the cross-border conservation management of Betung-Kerihun National Park (Indonesia) and Lanjak Entimau Wildlife Sanctuary (Sarawak). Similar arrangement will be made for Kavan-Mentarana National Park and its counterpart in Sabah. CIFOR is carrying out a project on the development of a Forest Model in Bulungan. This project could also be viewed as management capacity strengthening, including conservation and management by community involvement. This project is also funded by ITTO. In the past JICA also financed rehabilitation of mangrove forest in Bali, and the activity could be viewed as the model for mangrove rehabilitation. The project is currently under evaluation for possible extension. It is expected that the project could expand its activity by inclusion of training for those who would like to rehabilitate mangrove in their areas. The activities of CIRAD Foret on STREK, even though focusing on growth and yield, also contribute to the study of ecosystem.

Prevention and detection of forest fire could also be viewed as the means to carry out ecosystem conservation. Aside form JICA, other donors have worked in this field. European Commission, ITTO, GTZ and US-AID are among the donors assisting Indonesia on forest fire prevention and detection. Within the country, several agencies assist the Ministry of Forestry as well.

Seed management is being funded by DANIDA, which has been operating in Indonesia for sometimes. There is cooperation between FORDA as the main partner and JICA on genetic improvement of *Acacia mangium* and other species. This very cooperation addresses the issues of molecular genetics. The cooperation also deals with the need for human resource development, and therefore it invites the participation of companies to contribute to the effort of expanding the genetic based materials.

FORDA and KOMATSU Company work on development of apical vegetative propagation of meranti (all types of *Shorea*, but mainly *Shorea leprosula*, the most commercial of all) and the next effort is to produce in quantity (millions a year) to supply reforestation programs. Sumitomo Company also executes similar effort in cooperation with Kutai Timber Company in Indonesia. Experts from the University of Mulawarman, East Kalimantan, also involved in such cooperation. The most recent development is the development study on Forest Management and Carbon Fixing, cooperation between FORDA and JICA. Similar cooperation is reported to happen between Gadjah Mada University and one Company from Japan. The project funded by ITTO will establish 750 hectares of *Shorea* plantation, annually. Currently, EPSON Company also reforests some degraded areas in South Kalimantan. The management is offered to JIFPRO, which selected community forestry and intercropping system.

The outcomes of these cooperations make up a good start for expanding plantation forest in Indonesia. Currently, one state company namely PT INHUTANI I already planted about 15.000

hectares of meranti. The company is also establishing Dipterocarp Center, concentrating its efforts to research in various subject matters on meranti and practical education for plantation growing of meranti. Adjacent to the facilities are the Wana Riset Samboja, which also does similar efforts. This facility is the outcome of cooperation between FORDA and Tropenbos Foundation of the Netherlands. The Center and the Wana Riset will be available for researchers from all over the world.

The establishment of plantation forest, however, should be the conclusion of continuing, open and transparent consultation among the parties involved, namely, Badan Planologi of the Ministry of Forestry, the Provincial Government, the research organizations including FORDA, the executing agency and the community. The Badan Planologi will determine the national or macro location of the area, judging from its main role as the Planning Agency of the Ministry. The Provincial Government will determine the priority areas to be planted, after examining the maps and plans from the Badan Planologi. The priority should also determine the species to be planted and the likely use of products from those forests. This is the responsibility of the R&D organization. The Provincial Government should have the maps and plans ready to invite investment from external sources. It is expected that main activities of the rehabilitation and plantation will be Kalimantan and Sumatra, two islands in which the incidents of deforestation and forest degradation occur the most. The extent of rehabilitation and plantation should be around two to three million hectares per annum to cancel out the rate of deforestation and forest degradation of about 1,7 million hectares.

Since the promulgation of decentralization law and consequently the advent of regional autonomy, the Provincial Government is taking more responsibility on resource management. The decision on who should be the executing agency is therefore, on the hands of the Provincial Government. It may be cooperation between state-owned companies with external investors, or between the Provincial Government with the investor, or even direct investment. The Central Government, however, is determined to connect reforestation and rehabilitation programs with the existing companies and those to come. This plan is essentially enforcing the Forestry Agreement in which the concession holders are responsible to regenerate the forests, as one of the responsibility upon receiving the concession rights. Therefore, if the Provincial Government is determined to rehabilitate the area, it can easily assign the concession holders to do so. The community will have to be involved from the planning phase to invite their cooperation and support. Their support is mostly required to protect the investment. In addition, they could be persuaded to practise agroforestry, which is believed as their traditional occupation. In this regard, the Provincial Government practices the custom laws of the community. The agroforestry could take place for the land rehabilitation efforts. In brief, the involvement and participation of local community should generate sustainable and meaningful benefits for them, which is reflected as improving their prosperity.

In addition to the conventional plantation-industry relationship, new scheme could be developed. The scheme will address the issue of the mitigation of global warming and carbon sequestration. In this manner, plantation establishment and land rehabilitation will be considered as one means to sequester green house gases from the atmosphere. Such scheme will strengthen the cooperation between developed and industrialized countries with the countries possessing large areas of degraded and critical lands, including agricultural lands of the developing countries. The developed and industrialized countries could finance the rehabilitation efforts of such lands in the developing countries. The task of the developing countries would be to guard the areas under such program

that it would remain intact for the duration of the contract. The long period of the contract may be stated as an intergenerational one. To assure that the program would be successful, the developed countries could plan for the transfer of knowledge and management skill to the personnel from the developing countries that are engaged in the program.

The cooperation between countries or between a multilateral agency and one particular country that covers the transfer of knowledge and skill including management skill for the betterment of the economic well being, has been demonstrated by ICRAF. They have success stories on the practice of agroforestry. Such stories could attract for more serious adoption of such scheme. In the case of Indonesia, the most recent cooperation between FORDA and JICA on the Development Study of Forest Management and Carbon Fixing opens the possibility of accomplishing carbon-offset by way of Activities Implemented Jointly. In the arrangement, the Provincial Government will determine the location to implement such scheme, since the activities are expected to benefit the province considerably. The future role of the Provincial Government would be even greater, namely it has to look after the land for exceptionally long period of time, e.g. up to 100 years. Thus a very succinct agreement, which should be respected by their successors, is very important. A lengthy agreement may cause differing interpretation among parties; the result would be a disastrous investment. Therefore, it is possible to establish intergenerational forest management, to honor the agreement. Furthermore, the Central Government will have to declare her political position on this issue.

The issue of carbon fixing has been discussed extensively and during COP-6 of the FC3⁵ in The Hague, which sadly could not forge a decision. For us, the issue that has to be carefully considered is the role of reforestation and afforestation in the carbon fixing endeavors. Therefore the next meeting of the parties will re-visit the issues to resolve the differences which eventually to reach a decision. Being the country which extensive forest covers it is imperative that we should strive towards decision that will benefit all parties. In the meantime, a bilateral agreement may overtake the postponed multilateral one, to fill the gap on the need to rehabilitate the forests and to contribute to the improvement of environmental quality. In implementing the bilateral cooperation, it is necessary to examine the role of forestry in carbon sequestration. Nonetheless, such action constitutes an uphill battle of the countries that have extensive forest cover. There are parties that do not agree that forestry could participate to reduce green house gases. Therefore, such efforts require strong political commitments from such countries. Without one, the investor may simply refuse to come by. As in any other venture, any political commitment should be supported by scientific thought and practical experience. Therefore bilateral technical cooperation should direct to the development of methodologies to calculate the significance of forestry efforts in carbon fixing. We all know that the technical matters have been touched on the Kyoto Protocol among others, setting the base line, permanence, verification of additionally and also to assess the social, economic and environmental benefits from such attempt.

A three-way cooperation (Epson, JIFPRO, Director General of Land Rehabilitation and Social Forestry of the Ministry of Forestry) is about to begin in Indonesia. Fourth party will take benefit, however. This is the Provincial Government of South Kalimantan. The activities of the cooperation are rehabilitation of the degraded areas and reforestation in the province. The cooperation will fall under the Activities Implemented Jointly (AIJ) of the Kyoto Protocol. It is expected that many other

⁵ Framework Convention for the Climatic Change

companies will follow, given that the conditions are attractive. The security of investment, the simplicity of process and the assurance of lands for the duration of the projects are the main attraction of such venture. Essential for the success of the efforts are the support and cooperation of the local community. Such support will be encouraged by the conviction that such efforts will improve their economic welfare. Therefore, inclusion since the start of the efforts would constitute a useful step.

Expanding the Scope

While Indonesia is being taken as an example, it is understood that there are many similarities among tropical countries. One similarity might be the prevalent practice of excessive logging and the under care of land and soil. The result is the same, namely the presence of degraded lands and forests. They have to be rehabilitated and reforested. Establishment of plantation forestry and agroforestry are among the alternatives. As long as the parties involved could agree on a scheme, then a strenuous effort should follow to materialize the scheme. Many of those countries also have been engaged in international cooperation and donor institutions have assisted many of their development. Many of their able human resources also have been trained in the donor countries, and therefore the effort could take place with no apparent difficulty.

I hope my elaboration could provide some insights and thank you very much for kind attention.

6 Presentations

6-1 Presentation by Mr. Mikihiro Inoue, Senior Officer, Forestry Agency, Japan

Mr. Inoue thanked all the participants for coming to this Forum and their cooperation in enhancing Japanese private sector's international forestry cooperation. He specifically expressed his gratitude to foreign participants who traveled all the way to Japan to participate in the Forum and expressed his high expectation for the Forum.

Mr. Inoue said that he had participated in COP6 of UNFCCC held in the Hague in November,2000 as a member of the Japanese Government delegation and reminded the participants that carbon sink role of re-afforestation and forest conservation projects in developing countries, cooperated by Japanese private sector would have real positive impact on the theme of this Forum, i.e., enhancement of Japan's private sector's overseas re-afforestation cooperation.

Mr. Inoue's presentation consisted of the following parts., i.e., firstly, report of what was discussed at COP6 in the Hague; secondly, report of what was discussed specifically on carbon sink role of re-afforestation and forest conservation projects in relation to CDM(in other words, LULUCF in relation to CDM, which terminology Mr. Inoeue prefers to use) of the Kyoto Mechanism of the Kyoto Protocol; thirdly, introduction of the Pronk Paper at COP6 in the Hague; fourthly, why it is important to include LULUCF in CDM; and fifthly explanation about AIJ, Activity Implemented Jointly.

Report of what was discussed at COP6 in the Hague:

The main objective of COP6 in the Hague in November, 2000 was to decide the rules of implementation for the various matters stipulated in the Kyoto Protocol to the United Nations Framework Convention on Climate Change.

There were three different groups of countries at COP6: the Umbrella Group which included such countries as Japan, USA, Australia, Canada, and so on: EU; and the developing countries group and China. The different views from these three groups prevailed at the heated discussions at COP6.

At nearly the end of COP6 in the Hague, heated discussions were conducted at the Ministerial level, including all night sessions, and even the COP6 was extended by one day, unfortunately however, no decision was taken and it was adjourned. One of the most difficult parts to reach consensus at COP6 was how the matters related forests should be treated in the efforts to mitigate global warming: there were two aspects on it. The one aspect is how to estimate the quantity of CO2 absorption from atmosphere in developed countries , which must meet the GHGs reduction obligation, and another aspect is whether developed and developing countries cooperated carbon sink projects in the developing countries could be included in CDM. Mr. Inoue said in his presentation at this Forum, he would focus on the above last matter, i.e., whether CDM should include carbon sink projects like re-afforestation projects.

<u>Report of what was discussed at COP6 in the Hague specifically on carbon sink role of</u> <u>re-afforestation and forest conservation projects in relation to CDM:</u>

Mr. Inoue reminded the participants that the terminology of 'sink' is generally used in describing carbon absorption from the atmosphere in current international discussions.

Mr. Inoue further said that forest related sink projects include not only re-afforestation and forest conservation projects but also include such ones as fossil fuel substitution projects utilizing wood and forest biomass, Mr. Inoue informed the participants that he would use the terminology of LULUCF, Land Use, Land Use Change and Forestry, instead of 'sink' throughout his presentation in this Forum. Mr. Inoue pointed out that whether LULUCF should be included in CDM had been continuously discussed in the course of formulation of the implementation rules of the Kyoto Mechanism, which includes CDM, Carbon Trade, and Joint Implementation. (Joint implementation refers to the joint projects among developed countries and Kyoto Protocol stipulates the inclusion of sinks into JI, whereas no such stipulation exists in the case of CDM. Carbon Trade is stipulated to be done among developed countries.)

The Umbrella Group of developed countries has been demanding that CDM should include LULUCF, while EU has been opposing it. Among the developing countries, most of Latin American countries support the inclusion of LULUCF in CDM and number of countries in Asia and Africa which have the same view are apparently increasing. However, still many developing countries are silent and there are some countries which are against it.

The reasons of opposing LULUCF to be included in CDM are the permanence

problem, in other words the difficulty to maintain forests permanently: uncertainty of securing relevant data through feasible surveys and so on.

Some delegates opposed to inclusion of LULUCF in CDM by saying that local residents' right to live might be hampered or they might be pushed out from where they live if re-afforestation and/or forest conservation projects expand.

The counter arguments of those who support LULUCF inclusion in CDM are such kind of problems could be avoided by conducting careful feasibility study and adopting detailed, sond project design, and through conducting careful monitoring of project implementation; In relation to the local communities and local residents related concerns the problem should not exist as re-afforestation and/or forest conservation projects would not be able to exist without local partners involvement and participation, from our past experience.

The problem of permanence is particular to forestry sector and it is a persisting problem to be solved. At the SBSTA meeting in Lyon, France in September,2000, Colombia made a proposal of innovative way of calculating credit for such projects. Mr. Inoue said that he was looking forward to hearing what Sr. Claudio Forner would present at this Forum.

Introduction of the Pronk Paper at COP6 in the Hague:

At nearly the end of COP6, on 23rd November, 2000, the President of COP6, Mr. Pronk who is also Environment Minister of the Netherlands, issued a paper on his personal capacity, summarizing the discussions at COP6. The Pronk Paper at COP6 is therefore his summary of what had been discussed and tried to give direction to settle conclusion on matters of different views. The intention of issuing the Pronk Paper was to serve as a basis of further discussion to reach agreement. (But, in reality, no agreement had been reached.)

The first page of Mr. Inoue's 2-page reference paper, Forum Paper2, depicts the way the Pronk Paper dealt with the LULUCF and CDM.

Mr. Inoue explained the Pronk Paper proposed three major points for LULUCF and CDM; firstly, afforestation and reforestation should be included in CDM; secondly, other forestry related activities like prevention of forest decrease should not be included in CDM; and thirdly, the way of calculating credits in relation of CDM LULUCF projects should be decided later separately.

The reaction of parties on the Pronk paper was that EU opposed it as LULUCF was included in CDM. The Umbrella Group also opposed it as CDM included only afforestation and reforestation projects.

Mr. Inoue said that the Pronk Paper had at least one positive aspect of inclusion of re-afforestation in CDM, but added whether it would continue to serve as a basis of discussion at resumed COP6 in 2001 was not certain.

Why it is important to include LULUCF in CDM:

Mr. Inoue explained about the reasons why it is important to include LULUCF in CDM, from following aspects:

- Global forests are decreasing by 11.1 million ha annually. This fact is causing various environmental problems, including global warming.
 Re-afforestation in the developing countries, cooperated by developed countries and enhanced by inclusion of LULUCF in CDM, would turn the situation around.
- Re-afforestation projects in developing countries give employment opportunities to rural communities and give opportunity of sustainable development there.
- If re-afforestation projects could acquire credits for carbon absorption in early stage of planting, investors could recover their investment earlier than now and they could have chance to make another investment for re-afforestation elsewhere, including ones at so far unattractive places for investment.
- Re-afforestaion projects have possibility of becoming more attractive if they are combined with biomass energy projects.
 - In this regard, Mr. Inoue explained about the page 2 of the Forum Paper 2. , which shows the merits of this kind of combination.

AIJ, Activity Implemented Jointly:

Mr. Inoue said that he would expect that actual start of CDM would take some more time and drew participants' attention to AIJ, Activity Implemented Jointly.

Mr. Inoue said that AIJ, established in 1995 at COP1, was a experimental activity with joint cooperation between developing countries and developed countries, aiming at facilitating to solve technical problems of inclusion of LULUCF in CDM.

Mr. Inoue asked the participants to think seriously in starting AIJ.

Mr. Inoue, in conclusion, reiterated that CDM was only one mechanism, inclusing both developing countries and developed countries and hoped that developing countries active participation in the discussions for including LULUCF in CDM. Note by the President of COP6

23-11-00 7:04 PM

NOTE BY THE PRESIDENT OF COP6

23 NOVEMBER 2000

23-11-00 7:04 PM

LULUCF under the Clean Development Mechanism

- Parties agree that LULUCF activities can contribute to the two-fold purpose of the CDM. Parties therefore decide to include afforestation and reforestation under the CDM. However they also recognize the special concerns, which arise from implementing these projects.
- Parties decide that activities, preventing deforestation and land degradation, will not be eligible as credit generating projects under the CDM. However, these activities will be labeled as priority projects to be funded under the adaptation fund in order to address drought, desertification and watershed protection, forest conservation, restoration of native forest ecosystems, restoration of salinised soils.
- Parties recognize that accounting modalities and definitions for Article 3.3 may need to be modified, and that the issues of non-permanence, social and environmental effects, leakage, additionality and uncertainty should be properly addressed. LULUCF projects would also need to be in conformity with the objectives of other multilateral environmental agreements.
- Parties therefore decide to establish a process under the SBSTA to develop rules and modalities taking into account further methodological work by IPCC, where necessary, to deal with these issues.

Credits of CDM by Sustainable Forest Management and Fuel Biomass Use (Certified Emission Reduction : CER)



Forest Management

6-2 Presentation by Dr. Kyaw Tint, Director General, Forest Department, Ministry of Forestry, Myanmar

Dr. Kyaw Tint commenced his presentation by thanking the Japanese Government, the Board Chairman of JIFPRO, and the Chairman of the Forum, Dr. Kobayashi for him to have chance to come over to Japan for this Forum and having chance to make his presentation.

Dr. Kyaw Tint's presentation was delivered along the line with the attached Forum Paper 3 and consisted mainly of introduction of the natural forests management, reforestation, and carbon absorption and emission situation in relation to forestry in Myanmar.

- Firstly, Dr.Kyaw Tint explained that the total area of forests in Myanmar and said that they were divided into Reserved Forests, Protected Public Forests, and Protected Area systems.
- These three categories of forests are designated as the Permanent Forest Estate (PFE), which accounts for 20.85% of the national land. The Forestry Policy issued in 1995, according to Dr.Kyaw Tint, had decided that the percentage should be increased to 35%.
- Secondly, Dr. Kyaw Tint explained about the forest biomass in Myanmar, by forest categories. In doing this Dr.Kyaw Tint added that the forest area in Myanmar decreased by 0.64% annually between 1975 and 1989.
- Thirdly, Myanmar Selection System, MSS in natural forest management as the tool of sustainable forest management was explained.
- Fourthly, reduced impact logging by Myanmar Timber Enterprise, MTE, sole Government organization for harvesting, using elephants was explained.
- Fifthly, Dr. Kyaw Tint explained about re-afforestation situation in Myanmar; the accumulated planted areas as of the end of 2000 were 750,000 ha; and annual target areas of planting were 44,516 ha of which 30,352 ha were to be planted by the Forest Department and 14,164 ha by the, Dryzone Greening department, newly founded in 1997 in the Ministry of Forestry.
- Sixthly, carbon sink and carbon emission situation of Myanmar forestry sector was explained. The fact that Myanmar participated in ALGAS, Asia Least Cost Greenhouse Gas Abatement Strategy was explained and the fact that forestry sector was a net sink of GHGs in 1990 and would be expected to be so in 2020 was also explained Dr. Kyaw Tint, in conclusion, emphasized the importantce of global cooperation in enhancing re-afforestation for abating global warming.

UNION OF MYANMAR MINISTRY OF FORESTRY FOREST DEPARTMENT



by

DR. KYAW TINT DIRECTOR – GENERAL

(Paper Presented at the International Forum on Enhancement of Japan's Private Sector's Overseas Re-afforestation Cooperation held on 1-2 February, 2001 in Tokyo, Japan)

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STATUS OF FORESTRY ACTIVITIES IN MYANMAR WITH SOME REFERENCES TO GHGs MITIGATION

1. INTRODUCTION

Most scientists agree that due to increasing accumulation of greenhouse gases (GHGs), our world is getting warmer.

Emission of greenhouse gases such as carbon dioxide (CO_2) and methane (CH_4) began to increase gradually since the industrial revolution in the mid-18th century, and has been increasing at a rapid rate since 1950³.

 CO_2 emissions in the air have currently been estimated at about 3.2 GtC per year. If left unchecked, atmospheric CO_2 concentrations will result in an increase by 2 H to 6 HC in the global mean temperature and thus in a rapid climate change in about 100 years.

Studies show that emissions of CO_2 from the biomass can be prevented by conserving forests, and CO_2 removed from the atmosphere by re-afforestation.

Myanmar has a wealth of natural forest resources and has been accelerating re-afforestation programmes since 1960.

This paper describes conservation of natural forests, re-afforestation activities and status of carbon emission and uptake in the forestry sector from the perspective of mitigating GHGs emissions.

2. <u>CONSERVATION OF NATURAL FORESTS</u>

2.1 Current Status of Land Use

The current status of land use in Myanmar is provided in Table 1. Currently, the area of reserved forests and protected public forests come up to about 19% (12.5 million hectares) of the total land area of 676, 577 km². Other forest lands with an area of 21.3 million hectares constitute 32%, indicating the considerable potential area for reservation in the future. In agriculture, the current net sown area in Myanmar amounts to about only 14% (9 million hectares) and there still exists an equal extent of fallow and cultivable wasteland for agricultural expansion.

Sr. No.	Land use	Area (km ²)	% of total
1	Reserved Forest	125,911	18.7
2	Other Forest	212,776	31.7
3	Fallow Land	11,165	1.8
4	Net Sown Area	90,261	13.5
5	Cultivable Wasteland	79,148	11.7
6	Other Lands	152,316	22.6
	Total Land Area	676,577	100

Table 1	Status	ofLand	Use in	Myanmar
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Source: Forestry in Myanmar

2.2 Forest Cover

Out of the total land area of 676,577 km², 498,621 km² are covered with different categories of forests. Closed forests having an area of 293,269 km² constitute 43.3% of the total area of the country, while degraded forests with an area of 50,963 km² form 7.5% of the country area. Shifting cultivation is a major cause of forest degradation and it has affected 154,389 km² of forests, constituting 22.8% of the total land area. The breakdown of forest land use is shown in Table 2.

Table 2.ForestCover

Sr. No.	Forest Land Use	Area (km²)	% of total land area
1	Closed Forest	293,269	43.3
2	Degraded Forest	50,963	7.5
3 Forest Affected by Shifting Cultivation		154,389	22.8
	Total	498,621	73.6

Source: Forestry in Myanmar (2000)

2.3 Extent of Permanent Forest Estate

Three categories of forest lands, namely Reserved Forests, Protected Public Forests, and Protected Areas System legally constitute permanent forest estate(PFE). The extent of PFE at the beginning of Year 2000 is presented in Table 3.

Table 3.	Permanent	Forest	Estate	in	Myanmar	

Sr. No.	Legal Classification	Area (200 ha)	% of total land area
1	1 Reserved forest		16.40
2	Protected public forest	1,479	2.19
3 Protected areas system		1,527	2.26
	Total	14,118	20.85

Source: Forestry in Myanmar (2000)

PFE now covers 14.1 million hectares constituting 20.85% of the total land area.

The new Myanmar Forest Policy promulgated in 1995 stipulates to keep 35% of the total area of the country under permanent forests.

2.4 Forest Biomass

To date, 1347 species of big trees, 741 species of small trees, 96 species of bamboos, 1696 species of shrubs, 36 species of rattans and 841 species of orchids have been recorded to be existing in the Myanma natural forests.

Because Myanmar covers a very wide latitudinal and topographic range, vegetative types are diverse varying from mangroves through broad-leaved species to conifers.

The biomass of big trees alone has been estimated at over 2.2 billion cubic metres as shown in Table 4.

No.	Type of Vegetation	Productive forest		Uttproduct	Total	
		Total (mil.m ³)	m ³ /ha	Total (mil:m ³)	m³7ha	milm
1	Closed broad-leaved	1,859	90.0	357	30	2,216
2	Mangroves	12	30.6	4	10	16
3	Conifers	16	141.6	-	-	16
	Total	1,887		36	2,248	

Table 4. Biomass of big	trees in	the	natural	forests
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Source: Kyaw Tint (1995)

2.5 Land Use Changes

Forest lands are affected to some extent by human interference or encroachment, shifting cultivation, etc. The actual forest cover had decreased at an annual rate of 220,000 ha or 0.64% of the actual forested area during the period of 14 years from 1975 through 1989, which was mainly attributable to shifting cultivation and encroachment. However, the physical transfer of forest land into non-forest uses in the same period was only about 15,000 ha annually. There are still large tracts of undisturbed forests in the northern hilly region of the country. In spite of a heavy loss of forests, there still remain over 50% of actual forested area in the country as shown in table 2. Therefore, Myanmar is still regarded as one of the countries with the highest forest cover in the South-East Asian region.

2.6 <u>Sustainable forest management</u>

2.6.1 Management system

Myanma Selection System (MSS) has been being applied since 1856 to manage Myanma natural forests, especially natural teak-bearing forests, on a sustainable basis. Under MSS only mature trees are selected and harvested once in 30 years. Annual harvest of a tree species is regulated based on its annual growth.

2.6.2 <u>Silvicultural treatments</u>

2.6.2.1 Improvement fellings

Improvement felling is usually done in the natural forests in conjunction with girdling operations in order to enhance natural regeneration, establishment and growth of commercially important species. Cleaning, climber cutting and coppicing are also done to improve natural regeneration.

2.6.2.2 Gap and enrichment plantings

Gaps created in the natural forests are planted with suitable tree species and valuable species introduced in areas where forest density and the composition of the commercial tree species are low with a view to enriching existing forests. This will also, of course, sequester more carbon and hence contribute to reduction in GHGS emissions.

2.6.3 Protection

All forests in the country are state-owned. Up-dated forestry legal framework is in place and the Forest Department within this legal framework regulates annual harvest on a sustainable basis. Protection against illegal cuttings and encroachment is effectuated by the 15 thousand member strong forest staff seeking people's participation and enforcing forest laws where and when necessary.

Forest Law, 1992, has provisions for fire protection, prevention and suppression measures in natural forests. However, fire has never been a problem for the natural forests in Myanmar.

With regard to the outbreak of insect attacks and diseases, Myanmar has never experienced serious damages. Although teak has occasionally suffered some attacks by bee-hole borers and leaf defoliators, they are usually localized in nature.

2.6.4 Protected Areas System (PAS)

PAS now covers 1.53 million hectares and is being gradually increased to reach twice this extent in the near future. Logging in PAS is completely banned.

2.6.5 Least impact logging

Use of elephants for skidding is a traditional and consistent practice in timber harvesting in Myanmar. The elephant logging has proven to have the least adverse impact on the environment and biodiversity.

Timber extraction is permitted to be done only by the Myanma Timber Enterprise (MTE), a parastatal organization, which employs about 5,000 elephants for logging: about 3,000 of its own and 2,000 hired from the private sector.

3. <u>RE-AFFORESTATION ACTIVITIES</u>

3.1 <u>Re-afforestation programme</u>

Re-afforestation got momentum in early 1960's. The objectives had been to rehabilitate degraded forest lands, restore deforested areas and supplement various timber yields from the natural forests.

Since then the annual plantation programme has been intensified gradually till it has reached the present target of about 44,516 hectares. This annual planting target includes 30,352 hectares planted by the Forest Department and 14,164 hectares planted by the Dry Zone Greening Department.

The Forest Department establishes four types of plantations, namely commercial plantation, village supply plantation, industrial plantation and watershed plantation.

The Dry Zone Greening Department (DZGD) which was formed in 1997 with special tasks to restore environment, prevent desertification and mitigate climate change in the Dry Zone of Central Myanmar establishes forest plantations in order to meet these objectives.

Foreign NGO's like JIFPRO, OISCA and Yomiuri Shimbun of Japan, and KOICA of the Republic of Korea also contribute to the environmental restoration in the Dry Zone with forest plantations.

Up till the end of Year 2000, a total of about 750,000 hectares of various forest plantations have been formed all over the country.

Distribution of forest plantations by age-classes is shown in the following figure.



3.2 <u>Voluntary tree planting programme</u>

Myanmar people love trees and planting trees is considered to be a meritorious deed by tradition and religion. In this context, the Forest Department distributes about 17 million seedlings annually to the public including school children to plant in the school compounds, in the farms, in the backyards, on the roadsides and along canal banks, etc.

3.3 <u>Contribution to carbon sequestration</u>

The re-afforestation programme, apart from serving commercial and greening purposes, being additional to the existing forest carbon, helps reduce GHGs emissions and mitigate global warming.

4. STATUS OF CARBON EMISSION AND UPTAKE IN THE FORESTRY SECTOR

Myanmar joined the Asia Least Cost Greenhouse Gas Abatement Strategy (ALGAS) regional project in 1995 and launched the national ALGAS project in 1996, with the principle objective to reduce the rate of growth in GHGs emissions and also to enhance the development of the sinks.

Under that project GHGs inventories were conducted for all related sectors in the country to estimate the status of emission and uptake of GHGs for the reference year 1990.

Presented here are the results of the national GHGs inventory for the Land Use Change and Forestry Sector.

The Intergovernmental Panel on Climate Change (IPCC) methodology was applied for the said inventory, and the following land use changes were considered:

- a. Changes in forest and other woody biomass stocks;
- b. Forest and grassland conversion; and
- c. Abandonment of managed lands.

In addition, the method also addressed the immediate release of non-CO₂ trace gases (CH₄, CO, N_2O and NO_x) from the open burning of biomass from forest cleaning.

4.1 Total CO₂ emissions and uptake

The analysis of the results of the GHGs inventory had indicated that the net CO_2 emissions from the forestry sector in 1990 was -2362 kt of C.

Detailed information is provided in Table 5.

Sr. No.	Particulars	Net emission/ uptake (kt of C)
1	C uptake from changes in forest and other woody biomass stocks	- 12736
2	C emission from forest and grassland conversion	+ 17342
3	C uptake in abandonment of managed lands	- 7170
4	Non-CO ₂ gas emissions(trace gases) in terms of CO ₂ equivalence	+ 204
	Net CO ₂ emissions from forestry sector	- 2,362

Table 5. Forestry and land use change sector, total CO₂ emissions and uptake

+ = Emission, - = Uptake

C released from soil

4.2 Baseline Scenario Projection of Sectoral GHGs Inventory to 2020

The National ALGAS Project also projected CO_2 emission and uptake up to year 2020, assuming that total area of actual forests in the country was 34.4 million hectares in 1990 with the annual deforestation rate of 0.2 million hectares. CO_2 data projection from 1990 to 2020 is shown in Table 6.

R	lo.	Particulars	1990 AtC	2000 krC	2010 ktC	2020 810
	1.	C uptake from changes in forest and other woody biomass stocks	-12,736	-12,480	-12,077	-11,674
	2.	C emission from forest and grassland conversion	# +17,342	# +17,342	# +17,342	# +17,342
	3.	C uptake4. in abandonment of managed lands	-7,170	-7,115	-7,086	-7,068
	4.	non- CO ₂ traces gases in terms of C	+204	+204	+204	+204
	5.	Total net C uptake	-2,362	-2,051	-1,619	-1,198
	6.	Uptake in CO ₂ terms	-8,659	-7,519	-5,935	-4,392
# Cr	Total C released (on and offside burning) 7,916.80 kt C released from decay of above ground biomass 1,184.76 kt					

Table 6.Projection of C emission/uptake from 1990 to 2020, forestry sector

As evident from the table, there were no net GHGs emissions from the forestry sector either in the reference year 1990 or up to year 2020. Thus, forests could serve well as a net carbon sink in

8,240.10 kt

Myanmar for many years to come. However, total carbon emission from the forests for the base year was 17.34 Mt. Thus, forest depletion and degradation rate is frightening, and unless remedial measures are undertaken in time, will threaten the environmental and ecological stability of the country leading to a rapid climate change.

5. <u>CONCLUSION</u>

Myanmar still possesses a considerable extent of forest cover thanks to the systematic and scientific management continuously practiced for nearly one and a half centuries. Pristine natural forests still flourish in many parts of the country. According to the National GHGs Inventory there were no net carbon emissions in 1990 and this situation would remain true for the projected years till 2020.

Still, the Forest Department of Myanmar has been not only effectively conserving the existing natural forests but also enriching them in terms of density and value. Added to this are the accelerated re-afforestation activities being undertaken by both the State and the people. These undertakings will doubtless enhance productivity of these invaluable natural resources for socio-economic benefits of the nation, and promote carbon sequestration as well, thereby mitigating global warming and climate change.

As a matter of fact, the threat of the climate change is a global concern, and thus, the global community is urgently called for to effectively conserve existing forests and to re-afforest where necessary before it is too late.

* * * * * * * * * *

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Forestry in Myanmar

ALGAS project, Myanmar national results vol. 1

Activities of JIFPRO: Rich Forests for Tomorrow's Earth

The Kyoto Protocol, ITTO and Tropical Forests
6-3 Presentation by Dr. Nguyen Ngoc Binh, Director General, Department for Forest Development, Ministry of Agriculture and Rural Development

Dr. Nguyen Ngoc Binh commenced his presentation by thanking the Japanese Government and JIFPRO for inviting him to this Forum. He thanked Dr. Kobayashi for his Chairmanship and thanked all the participants in the Forum for their active participation.

Dr. Binh's presentation was delivered along the line with the attached Forum Paper 4 and focused on the National 5 Million Hectare Reforestation Programme.

Firstly, the recent history of reforestation was explained and Dr. Binh said that the National 5 Million Reforestation Programme started officially in 1998 as a programme covering the period from 1998 to 2010 with the following three objectives:

- Through the Programme, together with conservation of existing 9.3 million ha of natural forests, to increase forested area to 14.3 million ha, or increase the percentage of forested area against the national land from current 28% to 43%.
- To create 2 million jobs for the rural, mountainous area people, to raise income level there, and to eradicate poverty and food shortage there.
- To enable to produce 15 million m3 of timber, 20 million m3 of fuelwood, one million tons of paper, and one million m3 of wood board,

Secondly, Dr. Binh explained about implications of the Programme on each category of forests; to establish 2 million ha of the protection forests and the special use forests; and to establish 3 million ha of production forests.

Thirdly, the lessons learnt from the preceding Programme 327, covering the period from 1990 to 1998, was explained and various international cooperation from developed countries, international organizations, private investment from developed countries for the Programme 327 and for the current National 5 Million Reforestation Programme was explained.

Fourthly, the mechanism and supportive policy mechanism including the land allocation policy, was explained and again the expectation for foreign investment for the Programme related to re-afforestation projects under the Programme was emphasized.

Fifthly, problems associated with implementing the Programme was introduced.

Finally, Dr. Binh emphasized the importance of mitigating global warming, possible important role of re-afforestation on it and the international cooperation on it.

FORUM PAPER 4

MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT Forestry Development Department

THE NATIONAL FIVE MILLION HECTARE REFORESTATION PROGRAMME

By

Nguyen Ngoc Binh Director general Forestry Development Department Ministry of Agriculture and Rural Development

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REFORESTATION PROGRAMME TO ENVIRONMENT IN VIETNAM

INTRODUCTION TO THE PROGRAMME

The National Five Million Hectare Reforestation Programme was approved in 1998 by the tenth session of the National Assembly of the Socialist Republic of Vietnam. Government decision 661/QD-TTg of 29/7/1998 specifies objectives, tasks, mechanism and organization of this Project. After the Programme has been completed, the following is expected to have been achieved in rural and mountainous areas of the country:

- a) Creation of an additional five million hectares of forests and successful protection of existing forests (9.3 million ha), thus increasing the national forest cover from 28% to 43%, ensuring environmental security, reducing natural disasters, promoting aquatic development, conserving genetic resources and bio-diversity.
- b) Effective use of previously bare land, providing gainful occupation for two million persons, contributing to increased incomes for people living in or close to forests, contributing to hunger elimination and poverty alleviation, providing conditions for sedentary living, ensuring political stability and national security, especially in mountainous and border areas.
- c) Annual supply of 15 million m³ of timber and 10 million m³ of fuelwood, raw materials for conversion into 1 million tons of paper and 1 million m3 of lumber, thus satisfying domestic needs and leaving a surplus for export.
- d) Forestry would have become an important sector in the economy, making a significant contribution to socio-economic development in mountainous areas.

Specifically, the Programme is expected to achieve the following:

- a) Creation of 2 million ha of special-use and protection forests, through
 - Restoration of special-use forests and assisted natural regeneration of watershed protection forests, together covering 1 million ha;
 - Plantation of forests, for watershed protection, as wind breaks, as protection against sand, and for dike protection, as well as special-use forests in cases where ecological restoration is urgently required;
- b) Creation of 3 million ha of production forests, with forest trees as well as with perennial agricultural crops which have a canopy like that of forest trees, including:
 - 2 million ha for production of pulpwood, mining timber, non-timber forest products, and bamboo of various kinds.
 - 1 million ha of long-rotation cash crops and fruit trees.
 - Some 50 million trees per year scattered around houses, in school yards, along roads and canals, thereby meeting a part of the local demand for timber and fuelwood.
- (c) Achievements over project periods
 - 1998-2000: Reforesting 1,050,000 ha (350,000 ha per year), of which 700,000 by planting and 350,000 by natural regeneration
 - 2001-2005: Reforesting 1,950,000 ha (390,000 ha per year), of which 1,300,000 by planting, and 650,000 by natural regeneration.
 - 2006-2010: Reforesting 2,000,000 ha (400,000 ha per year).

2. LESSONS LEARNT

2.1. From Programme 327

Programme 327 operated from 1993 to 1998 and is estimated to have reached the following results:

- Arranging and paying for contracts to protect 1.6 million ha;
- Natural regeneration of 0.7 million ha, some of this area now yields valuable products;
- Planting 640,000 ha of forests;
- Planting 88,730 ha of cash crops and fruit trees including 21,000 ha of rubber, 10,000 ha of tea, 25,000 ha of fruit trees;
- Establishment of 31,300 ha of home gardens together with the rearing of 53,100 cattle;
- Creation of jobs for one million households.

The Government has reviewed the experience from six years of implementation of Programme 327. The main lessons are:

Firstly: The households have been dynamic units in implementing the project, following upon allocation of land and contracting for forest protection. Programme 327 has had organized production as follows:

- Participating households have received an allowance from the state for protection, natural regeneration, planting and tending forests. People were supported in planting trees both for protective and productive purposes. The persons planting the trees will also be entitled to benefit from their yield.
- Participating households who were granted Land Tenure Certificates (normally for 1.5-2 ha per household) for growing cash crops or for gardening and livestock rearing were entitled to an interest-free loan of between VND 3 and 5 million that they needed to pay back only when the crop was ready for harvest.
- Participating households enjoyed indirect benefits, for example from physical infrastructure created in the project area (roads, small scale irrigation schemes, health and education services).

Secondly: Farm households have proved able to make sound production decisions. They were free to choose tree species and establishment techniques, as long as they followed general guidelines by the Government and technical advice provided by the project owners. Implementation was not guided by commands. Project staff organized supply of seeds or seedlings, payments, technical advice, and also assisted in marketing the products obtained.

Thirdly: There is a need for consistent policies and regulations about investment and sharing of benefits. Programme 327 would have been more successful if it had implemented all relevant policies in a consistent way instead of changing them from year to year, thereby confusing the farmers.

Fourthly: The State Farms and State Forest Enterprises were useful in their leading roles, especially in remote and mountainous areas where infrastructure is poor and the educational level is low. Those enterprises played an important role in assisting participating households to implement the project.

2.2. From Foreign-supported Projects

International support to the forestry sector in Vietnam grew rapidly after the Forestry Sector Review was carried out, i.e. after 1992. Even before that, however, a few international organisations had been assisting the sector for more than a decade, notably the World Food Programme and Swedish SIDA which both supported major reforestation projects. The most relevant lessons from foreign-supported projects have however been learnt since 1992, when the general transition to a market-oriented economy was well underway.

There are two kinds of lessons, one relating to the technical contents of the cooperation projects, another to the fact that the projects are executed in cooperation between a Vietnamese and a foreign partner.

As seen from the perspective of the National Five Million Hectare Reforestation Programme, the main lessons to be drawn are the following:

a) Technical issues

- In order to be sustainable, activities in the forestry sector cannot be based on major subsidies by the State;
- There is good potential for farmer-based activities which yield interesting economic returns to them;
- A number of technical issues remain to be resolved, for example in selection of species of economic value to farmers, methods for assisting natural regeneration, and ways to organise effective protection of forests.

b) Cooperation issues

- International cooperation projects in the forestry sector have been supportive in the design and implementation of many of the key changes in the sector over the past decade, such as the transition from state forestry to people's forestry, the development of methods for allocation of forest land and planning for the use of the land allocated;
- Many cooperation projects have been heavily influenced by the availability of relatively large funds. In many cases, this has led to the development of methods that are not sustainable in the Vietnamese environment when the external support has been terminated;
- Many of the projects have to a certain extent operated outside the Vietnamese system, so that, even when suitable, the results achieved have not easily found their way into other parts of the forestry sector.

3. CHARACTERISTICS OF THE NATIONAL FIVE MILLION HECTARE REFORESTATION PROGRAMME

The Five Million Hectare Reforestation Programme is a continuation of Programme 327. It will build on the strengths and learn from the mistakes of that programme as well as from other projects implemented in the past.

3.1. Scope

The Reforestation Programme covers the three kinds of forests: special-use, protection and production forests. Plantation, natural regeneration and protection of exiting forests are to be combined. Forest protection and development are also seen as contributions to settling of

population and to the programmes for hunger elimination and poverty alleviation.

New forests should be established all over the country, distributed among regions in accordance with needs and capacities in each locality. Creation of concentrated plantations should be combined with planting of scattered trees.

The strategy for project implementation should unify the various steps in the forest production chain, from providing a vegetation cover for environmental reasons or commercial purposes through harvesting of wood and other products to the processing and eventual sale in the market of finished products. At the same time, those activities would create jobs and incomes for local farmers, contribute to hunger elimination and poverty alleviation as well as to industrialization and modernization.

3.2. Organization

The Programme has a mechanism for implementation that reaches from the national to the local level:

a) National level

At the national level, a Government Programme Board has been established, headed by a Vice Prime Minister. The Minister of Agriculture and Rural Development is the standing deputy. Other members of the Board come from MARD, MPI, MoFi, CEMMA, Farmers Association, Youth Union etc. The Government Programme Board is assisted by the National Steering Committee headed by a Vice Minister of Agriculture and Rural Development. Relevant departments of MARD and related Ministries are represented in the Committee. The Chairman of the National Steering Committee is assisted by a Programme Office, headed by a Vice Director of the Forestry Development Department and staffed by a full time team.

For field projects led by Ministries and other branches of the Government, Programme Management Boards are to be created to assist in implementation of the local projects.

b) Provincial level

The Provincial People's Committees are assisted by Provincial Steering Committees headed by a vice chairman of the PPC. Provincial Project Management Boards are located in the provincial Departments of Agriculture and Rural Development or the provincial Departments for Forestry Development.

A structure for management of local projects is to be established as required. The capacity of existing Management Boards for special use forests, protection forests and production forests should be utilized.

In the local implementation of the programme, provinces are to examine and re-arrange projects as relevant so that they cover the three types of forests (special-use, protection, and production). Provincial authorities are also to issue operational rules and regulations.

c) Project owners, implementers and participants

Any organization or individual meeting the following requirements is qualified to be project owner:

- be the manager of an investment project approved by the competent body,
- have land allocated or rented from a competent body.

Past experience indicates that state enterprises should be selected as project owners in the cases of special-use and protection forests. For production forests, any social or economic organization or individual fulfilling the demands above could be selected.

The local project owners are responsible for overall implementation of the project. For protection and special-use forests, the project owners are to arrange for two-way services (i.e. provision of production inputs and marketing of production outputs) to the local population and participating households. For production forests, project owners are to make their own decisions and be responsible for the activities as given for the corresponding investment categories in the law and related regulations.

Households are to implement project activities on land allocated or leased to them. They are to receive payment and enjoy benefits from the forests as provided by government regulations.

3.3. Planning

The National Five Million Hectare Reforestation Programme is large, covering 57 of the 61 provinces in the country and is also closely followed by the Government. Its constituent projects are located in rural and mountainous areas with an underdeveloped economy, difficult transport situation, and low level of education among the local people. In this situation, planning has to ensure two-way communication from the central to the local level so that the resulting project follows the overall Government intentions and also meets local demands.

At the central level, the Government defines targets as well as policies and organisation for implementation of the Programme. It also sets priorities between the three types of forest and between the provinces of the country. At the local level, the provincial authorities design their projects on the basis of the general guidelines from the Government and considering local strategies for socio-economic development and local land use plans.

In summary, it can be said that the distribution of targets is made from the Government to the provinces, while plans for implementation are compiled in the opposite direction, as follows:

Households + villages -> local project -> province -> the Government;

Appraisal and approval of projects starts at the local level. The analysis made at the local level is then reviewed by the Government.

For disbursement, Circular 28/1999/TT-BTC dated 13/3/1999 provides guidelines on the use of state funds for the Five Million Hectare Reforestation Programme. The provision of credits for establishment of production forests during 1999 is, in general, regulated by Decision 13/1999/QD-TTg dated 4/2/1999. Detailed rules are, however, still under preparation.

3.4. Policies

Species

Species to use in reforesting an area is to be selected in such a way that the purpose of the plantation is met in an effective way. In special-use forests, natural regeneration is to be given priority. If planting is needed, indigenous species are to be used. In protection forests, a

combination of species of forest trees, fruit trees and cash crops should be found that both provide protection and yield valuable products. For production forests, finally, both natural conditions such as soil and climate and the market situation must be considered, so that the wood produced can be processed and the final products are attractive in the market.

Land

Availability of land for the Programme is a major issue. A review of the availability of agricultural and forest land is to be carried out, starting at the commune level and then proceeding to the district and the provincial levels. The outcome will serve as a basis for the design of local projects.

Land is to be allocated and Land Tenure Certificates are to be issued to organizations, households and individuals. Land allocation is considered a key tool to encourage the participants in the Programme to manage and utilize the land in an effective way. The allocation of land should be completed by 31/12/2000.

Funds

State grants are provided for establishment of special-use forests as well as critical (*rat xung yeu*) and important (*xung yeu*) protection forests. The amounts to be paid are as follows:

- Protection contract: 50,000 dong/ha/year, for up to 5 years;
- Natural regeneration with enrichment planting: 1 million dong/ha, to be used over 6 years;
- Planting of protection forests: 2.5 million dong/ha, including tending in the first 3 years;
- Planting of production forests: 2 million dong/ha

The Five Million Hectare Reforestation Programme can use up to 5% of the budget for infrastructural activities such as forest fire control, pest prevention, and establishment of nurseries. Project owners are entitled to a management fee amounting to 8% of the total budget allocated to the project.

Credits are to constitute the main kind of funds for production forests and for less important (it xung yeu) protection forests. Land Tenure Certificates can be used as collateral for the loans. The investor has the right to borrow up to 70% of the total cost as estimated in the approved project plan and will pay reduced interest rates as regulated by the law.

Grants from abroad will primarily be used for loans, either directly or re-lent through the banking system. Interest rates, duration, and conditions for pay-back to be specified in each project document.

As stated in the law, foreign direct investments is primarily to be used for forest plantations in association with processing. Different ways to split the investment between foreign and Vietnamese partners can be envisaged, from 100% foreign investment to joint ventures and other kinds of cooperation.

Rights of participants

Participating households have the right to enjoy the following benefits: In case of special-use and protection forests, poor households residing near the forests shall be given priority in receiving contracts for forest protection. Such contract holders are entitled to harvest fuelwood and non-timber forests products under the canopy of the protection forest. Households holding contracts for assisted natural regeneration have the right to pruned and thinned products and

non-timber forest products. Households planting protection forests have the right to pruned and thinned products, non-timber forest products and, in addition, the entire production from fast growing tree species inter-planted in the protection forest.

In arranging contracts for regeneration or protection of special-use and protection forests, priority will be given to households engaged in fixed cultivation and sedentarisation projects, poor households, households living near the forest, and households who previously have held such contracts.

Owners of production forests shall have the right to decide the time and harvesting method, but he/she will have to regenerate the forest within one year after harvest.

All products from bamboo forests and non-timber forest products from natural forest can be freely marketed.

In general, the Government favours the use of products from man-made forests. In particular it encourages processing and exporting of processed products from such forests. The Government will also provide incentives leading to a shift from natural forests to plantations for supply of raw materials.

Taxes

Organizations, households, and individuals who plant forests and trees on bare land or process agriculture and forest products have the right to reduced tax rates as provided by the law encouraging domestic investment. Thus, products coming from restored natural production forests are exempt from resources tax. Further, exemption of provisional commercial tax is granted for all kinds of products legally harvested in plantation forests and for non-timber forest products harvested in natural forests.

Science and technology

Priority is given to studies and research leading to the identification of locally adapted tree species which have a high yield of valuable wood or other products. When suitable species, varieties, or provenances are identified, efforts will be concentrated to provision of quality seeds, possibly by import and to the establishment of nurseries operated by various local organisations. A system for quality certification of seeds should be developed, ensuring that low quality seeds are not used.

The problem of forest fires must also be studied and effective ways to limit them must be found.

Cooperation with foreign countries.

Foreign investors should be encouraged to cooperate with domestic investors in investing in reforestation and processing of forest products. More pilot tests should be made with renting land for forest plantations. Foreign investors are to be given favourable conditions as provided by the Law of foreign investment and Decree 10/1998/ND-CP of the Vietnamese Government.

4. PROBLEMS FORESEEN

The Five Million ha Reforestation Programme is likely to face major problems in the following areas:

Infrastructure, in particular regarding

- land use planning, where the rules and principles are unclear;
- funds for forest plantations (less than USD 200 per ha);
- ow level of education and knowledge in remote areas;
- poor physical infrastructure;
- limited market knowledge;
- scattered and inefficient processing units.

Capacity of implementing agencies, in particular with respect to

- varying quality of local staff in remote and mountainous areas;
- low capacity in monitoring and evaluation of projects;
- low capacity among staff and poor facilities for production of quality seeds and for forest fire control;
- poor physical facilities for project management boards.

5. PRIORITIES FOR SUPPORT FROM ABROAD

Given the size of the Five Million Hectare Reforestation Programme, it is obvious that external support is needed in many, if not most fields. There is a need for both technical and financial support. Technical support should, in particular, be considered for the following issues:

- Formulation of suitable policies on a broad spectrum of issues, for example credits, rights of the participants in the Programme, seeds, certification of sustainable forest management, monitoring and evaluation;
- Land use planning, in particular in finding a productive balance between the interests of the Government in a certain use of the land and the benefits for the users of the land;
- Development and application of suitable technologies in wood processing, not least so that the products will easily find a market;
- Human resources development, in particular in the following fields: project management, forest management (for commune staff), production of seedlings, pest control, forest fire control, and sustainable forest management in general;

Regarding financial support, there is in particular a need for the following:

- Soft loans or joint venture funds for establishment of production forests and construction of processing facilities;
- Grants for protection and regeneration of special-use and protection forests;
- Grants for infrastructure in remote and mountainous areas;
- Grants for project management, especially at the village and commune levels.

Support can be channelled to the local projects in different ways. One alternative is to direct it to the central project organisation from where it would be forwarded to the local level through the National Steering Committee. As an alternative, support could be directed at specific local projects.

6. EFFECTIVENESS OF THE NATIONAL FIVE MILLION HECTARE REFORESTATION PROGRAMME TO ENVIRONMENT IN VIETNAM

In the 1980's and 1990's international treaties on ozone layer protection and climate change were adopted under United Nations umbrella.

The Socialist Republic of Vietnam has acceded to the Vienna Convention on the ozone layer protection, and its protocol – the Montreal Protocol on substances that deplete the ozone layer; and the United Nations Framework Convention on Climate Change, and its protocol – the Kyoto protocol.

In Kyoto Protocol, a clean development mechanism (CDM) was established and Modalities and procedures for CDM were discussed in 6th conference of Parties of the United Nations' Framework Convention on climate change (COP6), held in the Hague, the Netherlands in November, 2000.

At the COP6, various matters were discussed in heated and sincere manner so that the world community could take effective measures to combat global warming and so that developed Countries could take effective measures to reduce the emission of the greenhouse effect gases. The modalities and procedures as to how and which additional human induced activities related to changes in greenhouse gas emissions by sources and removals by sinks in the agriculture soils, the land-use change and <u>forestry categories</u> shall be added to.

At COP6, international cooperation between developing countries and developed countries, might relate some parts to reforestation activities in developing countries supported by developed countries, which benefit both sides and may have potential to contribute to curbing global warming.

It would have also good effect on cooperation between developed countries and Vietnam to enhancing reforestation programme on carbon absorption leading to mitigating global warming

In order to mitigate CO2 emission, restrict the Ozone layer emission and climate changes. One of the importance actions is a forest cover rehabilitation. Therefore one of the three objectively of the Five Million Hectare Reforestation is enhancing the forest cover from 33.2% in 2001 to 43% in 2010 (From 10.9 million hectare to 14.5 million hectare of forest) including implement the active relating to climate changes, watershed regulation, Bio-diversity conservation.

- 6.1 Bio-diversity conservation are conserve the Fauna and Flora systems at Nation Parks and Conservation Natural areas based on building and implementing the research projects, protect core areas as well as economic develop in buffer zone areas for community people by the forestry community projects to sustainable development achievement.
- 6.2 Building the sub-projects of plantation in the very crucial areas in the provinces constantly was threatening by natural calamity in the all provinces in Vietnam to reduce flood, improve water resource and climate.
- 6.3 Building the sub-projects of plantation in the areas was threatening by desertion to increase forest cover, watershed conservation and climate changes.

6-4 Presentation by Dr. Plodprasop Suraswadi, Director General, Royal Forest Department, Thailand

Dr. Plodprasop Suraswadi commenced his presentation by thanking the Forum Chairperson, Board Chairman of JIFPRO, and organizing committee of JIFPRO for inviting him and his colleague to this timely Forum.

Dr. Plodprasop's presentation was delivered along the lines with the attached Forum Paper 5.

Firstly, Dr. Plodprasop reminded the participants that the global warming and climate change were the real problems to which the world community should pay real attention.

Secondly, Dr. Plodprasop reminded the participants that Thailand had been supporting faithfully and vigorously the international efforts to solve the problem of global warming and climate change. The Director General emphasized that the Thai Government supported the notion of the common but differentiated responsibility of each country in soving global warming.

Thirdly, Dr. Plodprasop introduced Thailand's large scale re-afforestation programme, core of which was the Forest Rehabilitation on the Occasion of the 50th Anniversary of the King's Ascension to the Throne Project. The Director General said that the results of the efforts, despite the late 1990s economic crisis, were promising and one of the positive effects was the decreasing carbon emission from LULUCF in Thailand.

Fourthly, the Director General expressed his disapointment that COP6 in the Hague had adjourned without taking any decisions. The Director General said that it was sure that re-afforestation and sound forest management were effective to mitigate global warming and the Royal Forest Department would continue to make efforts in that regards.

With regard to the problem of inclusion of LULUCF in CDM, the Director General expressed his wish that the matter should be solved through transparent, logical, and scientific analysis and discussions without politicizing it too much.

In conclusion, Dr. Plodprasop Suraswadi reemphasized the Royal Forest Department contribution to solve the problem through taking continuing efforts on re-afforestation and sustainable forest management.

FORUM PAPER 5

Thailand's Position on Enhancing Re-afforestation in the Country with

References to the Discussion at COP6 of UNFCCC

by

Dr.Plodprasop Suraswadi

Director General, Royal Forest Department, Thailand

Preamble

1. During the 1980s, the world's scientific community voiced their concern on climatic change based on evidence from various scientific observations. The major causes turned out to be coming from human activities that release additional greenhouse gases to the atmosphere. These onthropogenic sources of greenhouse gas especially carbon dioxide added to the atmosphere since the beginning of industrial revolution have caused a rise in average global temperature of 0.6°C. This increase in temperature may seem miniscule but its significance is already evident.

2. In the 1990s, the decade was the hottest decade on record with increasing severity and frequency of storms. Unusually extreme droughts and floods are causing casualty misery and hardship to people in many countries. Asian monsoons are becoming less and less predictable which results in damaged crops and less food production. All these events are believed to be the result from the warming of the global atmosphere which caused the change in the climate system. The most well known of this phenomenon is El Ninõ/Southern Oscillation (ENSO) which shift the climate system in the south pacific ocean and disrupt the annual pattern of weather on both sides of the pacific ocean. 3. The link of increasing carbon dioxide and other greenhouse gases with the increase in surface temperature of the earth are well established. The habitability of the earth depends on carbon dioxide level in the atmosphere which must not falling too low nor rising too high. Without carbon dioxide and certain other gases, which help trapping the heat near the earth surface, the average surface temperature would drop below 0°C. On the other hand, too much carbon dioxides would elevate the average surface temperature to the boiling point of water. At current levels, the earth's surface temperature is at a comfortable average of 15°C.

4. Maintaining carbon dioxide levels in the atmosphere within reasonable limit is an intricate balance of sources and sinks. This intricate balance is the result of the interplay between atmosphere, hydrosphere, biosphere, and lithosphere. Volcanoes add carbon dioxide to the atmosphere while the weathering of rocks, aided by water and plants, removes it. Living organism, especially, plants extract carbon dioxide from the atmosphere depositing the carbon in their cell and organs. Some of this carbon from living organism is released back to the atmosphere through decay and fire. Carbonates accumulating on the sea flour through weathering and run-off and detritus from marine creatures are eventually pushed under continental plates and finding their way to the atmosphere again through volcanic activities millions of years later. Furthermore, carbon from living organisms is buried underground in the form of coal, oil, and gases.

5. Through out the past history, the balance of carbon dioxide in the atmosphere is regulated by natural forces through bio-geochemical processed and volcanic activities. Some natural phenomena may have caused some fluctuations in the level of carbon dioxide in the atmosphere causing alternating warm and cold period of the earth. However, the earth's changing climate in the past appeared on geological time scale. Thus living organisms have time to adapt themselves to the changing environment. Types and distribution of biomes are testament to the adaptation ability of living organisms to fit into the existing niche.

6. Since the industrial revolution, human has returned large quantities of this formerly locked up carbon in the form of coal, oil, and gases to the atmosphere. Before the industrial revolution began there were approximately 580 giga tonnes of carbon in the atmosphere as carbon dioxide. At present, there is more than 750 giga tonnes of carbon in the atmosphere and the number is still rising at about 7 giga tonnes annually. Most of the exponential growth of carbon in the atmosphere is the result of industrial activities originated from the industrialized countries mostly in the north.

7. Facing with serious environmental consequences, which is considered serious threats to the sustainability of the world's environment, global economy as well as human health and survival, international community responsed to the threats with the development of the United Nations Framework Convention on Climate Change (UNFCCC). The convention, adopted in 1992, set out a framework for action aiming to stabilize atmospheric concentrations of greenhouse gases at a level that would prevent interference and disruption of the climate system. Since its existence, there were six meetings of the Conference of the Party (COP). The last, unfinished meeting was COP6 which was held in the Hague, the Netherlands, from 13-25 November 2000.

8. The Kyoto Protocol under UNFCCC was agreed upon in COP3 in Kyoto, Japan in December 1997 after intense negotiations. The Protocol is an agreement that commits developed countries and countries making the transition to market economy to achieve quantified target for decreasing their emissions of greenhouse gases. These countries, known under the UNFCCC as Annex I Parties committed themselves to reduce their overall emissions of six greenhouse gases by at least 5% below 1990 levels over the first commitment period between 2008 and 2012 with differentiated targets for most of these countries. The Protocol also provides the basis for three mechanisms to assist Annex I Parties in meeting their targets cost-effectively. These mechanisms are an Emission Trading system, Joint Implementation (JI) of emission-reduction projects between Annex I Parties, and a Clean Development Mechanism (CDM) to encourage joint projects between Annex I and non-Annex I Parties.

Thailand's Position on Climate Change Convention

9. Thailand, as a member of the world community, realized the profound importance of climatic change. We have signed the Convention in June 1992 and subsequently ratified the Convention on December 28,1994. As for the Kyoto Protocol, we have signed the Protocol on February 2,1999 but still not yet ratify. As all these actions indicated, Thailand is fully supported the effort of the world community to mitigate global warming and climatic change.

10. Since then, Thailand has taken steps to initiate national actions on climate change problems. The National Climate Change Sub-committee was established in 1993 under the National Committee on Environment. National Focal Point Agency has been assigned to the Office of Environmental Policy and Planning (OEPP), Ministry of Science, Technology and Environment. Thailand has launched the national greenhouse gases inventory studies as well as several other studies related to climate change in order to prepare National Communication to be submitted to the UNFCCC Secretariat.

11. As for the role of Thailand in UNFCCC, we are actively cooperating with the world community to help solving the problems in climate change. By formulating policy on greenhouse gases reduction which will not cause negative effect on the nation's social and economic development. Thailand endorses the concept of "common but differentiated responsibilities" in dealing with problems on climate change and base its policy alternatives on "no regret option" when dealing with measures to reduce greenhouse gases emission.

The Role of Forestry in Greenhouse Gas Mitigation

12. In 1994, Thailand's greenhouse gas emission was in the order of 286 million tonnes of carbon dioxide. This figure is in term of "global warming potential" which equate other greenhouse gases with carbon dioxide. Out of this figure, the actual carbon dioxide emission of Thailand was 241 million tonnes which more than half of this amount was produced by energy and transport sectors. However, during that same period, the amount of carbon dioxide taken up by the country's forest was estimated at 39 million tonnes, while carbon dioxide emission from land use, land use change and forestry (LULUCF) was estimated at 59 million tonnes.

13. The good sign of forestry's role in carbon dioxide emission was that the net amount of carbon dioxide emitted from LULUCF showed a clear declining trend. From Thailand's country study, carbon dioxide emission from LULUCF was projected to be 59 million tonnes in 1994, 51 million tonnes in 2010, and 46 million tonnes in 2020. This clear trend in reduced carbon dioxide emission from LULUCF is a tangible result from our national forest policy in forest conservation, restoration, and re-afforestation as well as restrictions on forest land utilization and harvesting.

14. The Royal Forest Department (RFD) is the sole responsible government agency in forest resources of the country. It's mandate covers the whole range of forest resources conservation and management. The past four decades of national economic and social development plans exploited the country's endowment in forest resources which resulted in rapid loss of forest area due to deforestation and conversion of forest land for other uses. The scenario is now changing and improving. Great emphasis on protecting the existing forest areas become the main priority of RFD. At the same time, forest restoration as well as re-afforestation activities are encouraged and promoted.

15. As a result of these efforts, the loss of forest area has been stopped. Large scale rehabilitation of degraded forest area has been initiated in 1993 through "Forest Rehabilitation on the Occasion of the 50th Anniversary of the King's Ascension to the Throne Project". The Project is aiming to establish 5 million rais (800,000 ha.) of "permanent forest" through reforestation of the degraded forest areas. Up to present time, RFD in collaboration with private sectors has already established more than 2.5 million rais (400,000 ha.) of "permanent forest". The rehabilitated "permanent forest" areas are mostly in the northern part of the country, which is the most important watershed areas of the country.

16. In addition to the above project, RFD also undertakes its own watershed rehabilitation activities in its annual work plans. This activity which is aiming to stabilize and rehabilitate critical watershed areas of the country is also a major sink in carbon dioxide mitigation. Furthermore, since 1992 the government through RFD have launched "Economic Tree Plantation Promotion Project" with the aims to diversify crop land to forest plantation by providing subsidy to participating farmers. Up to present time this undertaking results in additional 2.35 million rais (376,000 ha.) of forest plantation in Thailand. The increase in forested area is evident when the forest area was reassessed in the year 2000 by using GIS although confirmation by ground truthing is not yet completed. (See Annex)

<u>RFD's Position on Re-afforestation with Reference to the Discussion of</u> COP6 of UNFCCC

17. All of these forestry activities stated above are, undoubtedly, the major contributor to Thailand's ability to mitigate carbon dioxide emission even though the objectives of those projects are not intended to deal with greenhouse gas mitigation of the country. They are nevertheless, taken up carbon dioxide from the atmosphere in significant amount relative to emission figure of the country. Therefore, forestry activities, especially, re-afforestation activity is seen as the most cost-effective and feasible to carry out in order to mitigate global warming by removing carbon dioxide from the atmosphere.

18. Even though there is no consensus in the meeting of COP6 – Part I on the inclusion of re-afforestation in the Clean Development Mechanism (CDM), the Royal Forest Department will continue its policy and implementation of the work plans in forest conservation and reafforestation as much as its own resources permit. However, since the undertaking of re-afforestation to mitigate global warming costs a lot of money to carry out the activities, so in order to be fair to all parties, this costs should be borned by those who are the major contributor to the problem. The problem of the inclusion or exclusion of re-afforestation in CDM is a matter of selfishness with no moral consideration to take responsibility in reducing greenhouse gas emission and global warming mitigation.

19. Although Thailand is a non – Annex party to the UNFCCC which is not required to take any action to reduce greenhouse gas emission in order to meet the target set forth by the Kyoto Protocol, it has taken many important actions to deal with the problem of climate change. Several measures are implemented in greenhouse gases reduction front to reduce

greenhouse gases emission through improved energy efficiency in industrial and transport sectors as well as curbing or switching the use of greenhouse gases in industry. On greenhouse gas removal front, forestry through conservation and re-afforestation measures are the main thrust in the removal of greenhouse gas from the atmosphere. It is the activity that Thailand could contribute effectively to the world community's effort to mitigate global warming.

20. The Royal Forest Department is, therefore, eager to promote forest conservation and re-afforestation activities as a major activity in greenhouse gas mitigation project for the world's benefit and better environment for humankind. The different viewpoints in inclusion or exclusion of forest conservation and re-afforestation activity in any mechanism seem to be irrelevant in view of urgent actions the world community need to take to avoid the impending environmental crisis which threatens the survival of humankind.

<u>ANNEX</u>

Thailand's Forest Area Assessment 2000

The result of new assessment of forest area in Thailand using GIS in year 2000 reveals that the country forested area has increased from 153,952 km² in 1995 to 171,825 km2 in 2000. The increase in forested area occurred significantly in the northern part of the country. Other regions also gain slight increase in forested area (Table1).

Analyses of factors contributing to this increase indicated that several factors are all contributing to the result obtained. These contributing factors are;

1. Re – afforestation and restoration of degraded forest through various projects and work plan of the Royal Forest Department i.e. Forest Rehabilitation on the Occasion of the 50th Anniversary of the King's Ascension to the Throne Project, Economic Tree Plantation Promotion Project, work plan on watershed area rehabilitation as well as work plans on reforestation for conservation and community forest plantation.

2. Natural regeneration and succession as a result of logging ban measure in effect since 1989.

3. Increase in the establishment of protected areas (national park and wildlife sanctuary).

4. Increase in people's participation in forest protection as a result of awareness raising campaign.

5. Increase in efficiency and effectiveness of forest five prevention and suppression.

Degion	Aroo	1995 Forested Area	2000 Forested Area	Change
Region	(Km ²)	(Km ²)	(Km ²)	(Km ²)
Central	21,165	721	1,584	+863
Eastern	36,561	7,689	8,250	+561
Northeastern	167,650	24,247	26,929	+2,682
North	172,286	86,484	98,032	+11,548
West	45,885	18,432	19,752	+1,320
South	70,149	16,380	17,278	+898
Total	513,698	153,952	171,825	+17,873

Table 1 : Forest Area Data in 1995 and 2000



Forested Area in 1995Forested Area in 2000

: Comparison of existing forest area of Thailand in 1995 and 2000

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6-5 Presentation by Dr. Mark Stevens, Assistant Manager, International Greenhouse Partnerships Office, Department of Industry, Science and Resources, Australia

Dr. Mark Stevens commenced his presentation by thanking JIFPRO for inviting him to the Forum.

Dr. Stevens said his presentation would consist of two parts: one would be the outline and explanation of present situation concerning CDM and Joint Implementation, JI of the Kyoto Protocol; the other part would be explanation about the activities of the International Greenhouse Partnerships Office. The material used and distributed to the Forum participants for Dr. Mark Stevens' presentation was the attached Forum Paper 6.

<u>CDM of Kyoto Protocol to the United Nations Framework Convention on Climate</u> <u>Change:</u>

Dr. Mark Stevens drew the participants' attention to the fact that 39 countries listed in the Annex 1 of the Protocol had the obligation to reduce GHGs between 2008 to 2012 by 5% in average against the 1990 level.

Dr. Stevens said that CDM of the Kyoto Protocol stipulated the relation between developing countries and developed countries; CDM would assist non-Annex I countries to achieve sustainable development in each country, while CDM would give Annex I countries to acquire Certified Emission Reduction, CER, which would assists Annex I countries to achieve GHGs reduction target. CDM's possible decision making mechanism, like Executive Board and Operational Entity. was also explained by Dr. stevens.

Dr. Stevens said there had been no clearly written indication in the Protocol that sink projects could be included in CDM.

Joint Implementation, JI of Kyoto Protocol:

Dr. Stevens explained that JI stipulated things related to cooperation among Annex I countries through conducting emissions reduction and/or sink projects.

As the result, CER acquired could be transferred from one developed country to another developed country. The decision making mechanism of Π would be more voluntary than CDM.

The matters to be decided on CDM and JI:.

Dr. Stevens reiterated that implementation methodology, whether there should be ceiling in using CDM and JI, whether it should include sink projects in the case of

- CDM, in which way the proceeds of CDM would be spent, and so on had not been decided yet.
- Dr. Stevens touched on the potential of CDM and $\mathcal{J}I$, too.

International Greenhouse Partnership Office:

Dr. Mark Stevens explained about the International Greenhouse Partnership Office, which was an Australian Government Office and for which Dr.Stevens was working.

Dr. Stevens said that IGP was established for expediting CDM and JI, through participating in international discussions and through the efforts to establish various methodologies.

Dr. Stevens said that IGP had been conducting workshops on CDM in some developing countries, had published 5 workbooks on such subject as project baseline, which is an

essential factor to verify additionality of CDM(and JI) projects, and monitoring methodology.

Dr. Stevens said that IGP was in the final stage to publish 2 more workbooks, one of which would be on LULUCF. Dr. Stevens further mentioned that IGP had been participating in 13 AIJ projects in the

developing countries and ,through them, had been trying to identify the ways to cope with such difficult problems of leakage, permanency, and so on.

Dr. Mark Stevens, in many parts of his presentation, emphasized the importance of involving developing countries in the process, especially in CDM.



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International Greenhouse Partnerships

INTERNATIONAL CLIMATE CHANGE PARTNERSHIPS

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The Kyoto Protocol and the flexibility mechanisms

The Kyoto Protocol was adopted by the Third Conference of the Parties to the United Nations Framework Convention on Climate Change in December 1997. Australia views the Protocol as a significant step forward in addressing climate change. When it enters into force, the Protocol will bind thirty-nine Annex I countries (developed countries and economies in transition) to individual emissions limitation and reduction targets with a view to reducing their overall greenhouse gas emissions by at least five percent below the 1990 levels in the first commitment period of 2008 to 2012.

Attainment of an equitable outcome was achieved, in large part, by setting differentiated targets for countries that reflect their individual circumstances. In Australia's case, this meant agreeing to a target, for the first commitment period, of 108% of our 1990 emissions. This represents a 30 per cent reduction in Australia's greenhouse gas emissions from a business as usual scenario. To reach this target will be challenging. For this reason Australia and other countries strongly argued in Kyoto for the inclusion of the so-called Kyoto flexibility mechanisms - International Emissions Trading, the Clean Development Mechanism and Joint Implementation.

The flexibility mechanisms hold the prospect of substantially reducing the cost of implementing the Kyoto Protocol compared to a situation where each country met its target by domestic measures alone. Economic modelling by the Australian Bureau of Agriculture and Resource Economics - known as ABARE - suggests that emissions trading alone would reduce the global cost of meeting Kyoto targets by 80% and for Australia by 20%.

The Clean Development Mechanism (CDM) is significant because it assists non-Annex I (or developing) countries in achieving sustainable development through project activities resulting in certified emission reductions. In turn this gives developed countries access to low cost abatement opportunities in developing countries, and thereby lowers the global cost of reaching the Kyoto targets. Importantly, it will also lead to substantial flows of investment and technology to developing countries. A share of the proceeds from certified project activities will be used to cover administrative expenses as well as to assist developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation, thereby providing further benefits to non-Annex I countries. Importantly, the Kyoto Protocol states that credits arising from CDM projects could accrue from as early as the year 2000.

The other project-based mechanism, Joint Implementation (JI), allows Annex I countries to transfer or acquire from any other Annex I country emission reduction units from projects aimed at reducing anthropogenic emissions by sources or enhancing anthropogenic removals by sinks of greenhouse gases in any sector of the economy. The economies in transition in eastern Europe are considered to be prime candidates for JI projects as there are considerable opportunities to improve the efficiency of these economies.

The Kyoto Protocol covers six greenhouse gases; viz carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride. It also allows greenhouse gas mitigation in a wide range of sectors, including energy, industrial processes, agriculture and waste management. The Protocol has great potential to trigger, promote and facilitate innovative greenhouse gas mitigation technologies as Annex I countries seek to meet their commitments in a cost-effective manner.

The CDM and JI represent potential avenues for countries hosting projects to become direct beneficiaries from investment in these technological developments and know-how that will need to be utilised by developed countries to meet their commitments under the Protocol. In so doing, these mechanisms could help to set host countries on a more sustainable path in relation to greenhouse gas emissions mitigation.

The Protocol makes it clear that any decision to participate in the CDM and JI must be voluntary. It will be up to individual countries to determine whether proposed projects are consistent with their development priorities. Given the voluntary nature of these mechanisms, projects must be mutually beneficial to the participating entities. From a host country perspective, projects will need to assist them to meet their development goals. In addition, project hosts may also wish to examine the extent to which projects enhance investment flows and facilitate other benefits, such as the transfer of technology or know-how and human resource management.

From the perspective of investor parties, the costs associated with implementing CDM and JI projects will inevitably be compared with the costs of domestic measures and international emissions trading between Annex I countries to reduce emissions.

Australia believes that it is important the rules for the CDM and JI are settled in a way that ensures environmental integrity but does not weigh down CDM and JI projects with unnecessary administrative costs. Such costs would only make the CDM and JI unattractive to investors, thereby reducing the levels of potential investment and technology transfer. Furthermore, the level of adaptation funding available from the share of proceeds would be diminished.

The Kyoto Protocol also makes it clear that the CDM and JI may involve public and/or private entities. The engagement of the private sector will be important if these mechanisms are to be utilised to its full potential. From a technology transfer perspective, private sector involvement is important as most intellectual property resides with the private sector. Furthermore, over recent years, financial flows from industrialised to non-Annex I countries have been increasingly driven by the private sector.

However, the Kyoto Protocol provides only a basic outline of the mechanisms. Much remains to be done to agree the details governing the operation of the CDM and JI. It is hoped that agreement will be reached on these details when the sixth Conference of the Parties resumes later this year.

Potential CDM and JI Projects

If the CDM and JI are to be used to their full potential to deliver economic and environmental benefits for all participants, Australia believes they should include a wide range of activities. If international negotiations result in the exclusion of certain types of activities from these mechanisms, some countries and regions are likely to miss out on capturing project opportunities relevant to their development goals. In addition, by allowing a broader range of projects to be

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implemented in a greater number of countries, more revenue would be generated for adaptation funding to the most vulnerable countries.

In particular, Australia strongly believes that sinks should be included in these mechanisms. Other areas that could be covered by the CDM and JI include:

- (i) enhanced efficiency of electricity generation, distribution, transmission and use;
- (ii) the use of non-carbon energy resources, eg biomass, solar, wind, hydro, especially in remote or rural areas;
- (iii) improvements in primary energy production and transportation, eg. capture and utilisation of coal mine gas, reduction in pipeline gas leakage;
- (iv) the substitution of low-carbon intensive fuels, such as natural gas, for more carbon intensive fuels, eg coal, oil.

Some countries are arguing for the exclusion from the CDM of certain project types including sinks. By trying to limit the range of potential CDM projects, they would limit the number of developing countries which would have the opportunity to engage in activities that are environmentally and economically beneficial and would reduce revenue generated for adaptation funding. Australia, in contrast, believes it is up to developing countries to decide what is in their best interests for sustainable development. Sinks projects offer the potential to arrest major environmental problems, such as desertification and salinity, and ensure that forestry activities are managed on a more sustainable basis.

Some commentators have noted that, unlike energy projects, there is a risk that sinks projects may not deliver a permanent abatement of emissions. However, global warming is reduced when sinks remove greenhouse gases for a period of time. Clearly, permanence is an important issue that will need to be addressed in the design of sinks projects. However, it is not a reason to reject sinks projects, as measures exist which can ensure that the level of credits that investors receive from sinks projects is commensurate with their climate change benefits.

International Greenhouse Partnerships Program

As part of Australia's commitment to ensuring a workable and cost effective CDM that would contribute to developing countries' sustainable development, the Australian Government established the International Greenhouse Partnerships (IGP) Program. The Program is working closely with partner countries from most regions of the world and has focused on capacity building and the establishment of commercial international collaborative projects to reduce greenhouse gas emissions.

A key element of the capacity building involves the staging of training and development courses for developing countries and economies in transition. The courses seek to increase awareness of the technical issues associated with the establishment of CDM and JI projects. To date, two courses have been held in Australia (June 1999, May 2000) which were attended by representatives from 17 developing countries and economies in transition. A third course is to be held in May this year.

In preparation for the training courses, the IGP Program has commissioned the production of a series of workbooks which are providing practical guidance on the establishment, design and monitoring of various types of project, including potential methodologies for determining whether projects meet additionality requirements under the CDM and JI. To date, five workbooks for the energy sector have been completed and two workbooks relating to land use change and forestry (LUCF), and transportation, are under development.

To gain experience in the lead up to the establishment of the CDM and JI, Australia has reached agreement with seven countries from around the world - namely Mauritius, Chile, Malaysia, Fiji, Indonesia, Viet Nam and Solomon Islands - to establish thirteen projects under the Activities Implemented Jointly (AIJ) pilot phase. The projects cover a diverse range of activities including forest plantations using improved planting stock, energy efficiency improvements, renewable energy in rural villages and better industrial production technology.

The IGP Office is currently in the process of expanding the range of project opportunities. To facilitate the establishment of new projects outside Australia, funding is being provided to Australian-based organisations on a competitive basis for projects, where the host country government is willing to accord the project official status under the UNFCCC.

As emission reduction credits are not available from the AIJ pilot phase, there are few incentives for business to participate at this stage. Nevertheless, the existing projects are providing some insight into the potential benefits which could flow in the form of technology transfer, capacity building and investment when the CDM and JI become operational and credits become available.

Concluding Remarks

The Kyoto Protocol provides us with a way to reduce global greenhouse gas emissions. As part of the global response Australia, along with other developed countries, has agreed to take on emissions targets. This represents a significant challenge. The best way to ensure that the environmental goals of the Protocol are reached is to reduce their economic cost.

For this reason Australia has been arguing strongly that the Kyoto flexibility mechanisms need to be cost effective, without quantitative restrictions on their use, and attractive to the private sector. From our perspective, the best way to achieve this is by making the mechanisms market-based and minimising the bureaucratic hurdles that need to be overcome at both the international and domestic levels.

Doing so will ensure that the goals of CDM and JI - including increased investment and technology transfers between countries - will be realised. At the same time, the likelihood that the Protocol's environmental goals being reached will increase.

At the same time Australia has put in place a domestic program for reducing greenhouse emissions that will see almost \$1 billion spent over the next four years. This represents the largest per-capita expenditure on greenhouse gas reduction in the world.

As this level of expenditure indicates, the Australian government attaches a high level of importance to reducing greenhouse gas emissions, and it wants to see the Kyoto Protocol work.

Thank you.





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International Climate Change Partnerships

Mark Stevens

International Greenhouse Partnerships Office



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Content of Paper

- Kyoto Protocol
- Clean Development Mechanism (CDM)
 - Purpose & Authority
- Joint Implementation (JI)
 - Purpose & Authority
- CDM & JI Status
- International Greenhouse Partnerships
 - policy, capacity building & projects
- Conclusions



Kyoto Protocol

 Binds 39 Annex B countries (developed countries & EITs) to reduce their overall greenhouse gas emissions by at least 5% below 1990 levels in 2008-2012

 Includes provision for collaboration between Annex I and non-Annex I countries (newly industrialising & developing countries) through the Clean Development Mechanism

(CDM)



CDM -Purpose

- To assist non-Annex I Parties in achieving sustainable development and in contributing to the ultimate objective of the Convention.
- Assist Annex I Parties in achieving compliance with their quantified emission limitation and reduction commitments.
- Under the CDM:
 - 1. non-Annex I countries will benefit from project activities resulting in certified emission reductions (CERs)
 - 2. Annex I Parties may use the CERs from such project activities to contribute to compliance
 - 3. a share of proceeds will cover administrative expenses and assist with adaptation costs for the most vulnerable Parties



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CDM -Authority

 The CDM shall be subject to the authority and guidance of the COP/moP

- The CDM shall be supervised by an Executive Board (EB), which reports to the COP/moP
- Each project activity shall be certified by operational entities (OEs)


JI - Purpose

 Any Party included in Annex I may transfer to, or acquire from, any other such Party emission reduction units resulting from projects aimed at reducing emissions by sources or enhancing removals by sinks of greenhouse gases in any sector of the economy





JI - Authority

- A project must have the approval of the Parties involved
- Legal entities may be authorised to participate, under an Annex I Party's responsibility, in actions leading to the generation, transfer or acquisition of emission reduction units (ERUs)



Potential CDM/JI Projects

- The use of non-carbon energy (renewable) sources as an alternative to fossil fuels
- Improvement in the efficiency with which energy is recovered and used
- The enhancement of sinks
- The capture and utilisation of fugitive emissions
- The substitution of low-carbon fuels for high carbon fuels



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CDM & JI -Status

Kyoto Protocol provides framework for the CDM and JI

 Many of design and operational aspects remain to be agreed

Aim to resolve outstanding issues by COP6
 Part I - November 2000
 Part II - mid 2001





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CDM & JI -Status

Major Issues Requiring Resolution

Supplementarity

should there be a limit on use of CDM and JI?

- Project Coverage
 - what types of projects should be eligible?
 significant opposition to sinks projects
- Institutional arrangements
 - CDM what should be role and composition of Executive Board?
 - ♦ JI what institutional arrangements are necessary?
- Share of the Proceeds
 - CDM what level?
 - JI should there be a levy?





International Greenhouse Partnerships (IGP) Office

- Established by Australian Government to help progress the Kyoto project-based mechanisms, including the CDM by:
 - contributing to international negotiations
 - undertaking methodological work to ensure projects are conducive to business engagement and deliver real emission mitigation benefits
 - establishing AIJ/CDM-type projects overseas to gain experience
 - adopting portfolio approach (range of countries, range of project types)
 - undertaking capacity building activities with newly industrialising and developing countries



IGP Office

JI/CDM Policy Development

- IGP Office is lead agency in Australian Government on JI and CDM, including for international JI and CDM negotiations
- Working with Umbrella Group to promote market-based, cost effective JI and CDM
- Specific Australian submissions to progress negotiations, including AIJ and CDM
- Bilateral agreements with potential host countries; eg. Indonesia and Republic of Korea
- Participation in international fora to promote Australian interests in JI and CDM





IGP Office

- Capacity Building
- Workshops
 - Increase awareness of CDM and project opportunities
 - Indonesia (July 1997), Mauritius (July 1998), South Pacific (July 1999), Viet Nam (September 1999)
- Training and Development Courses
 - increase awareness of methodological issues (eg. baselines)
 - ♦ June 1999, May 2000 17 non-Annex II countries
 - ♦ 3rd course May 2001





IGP Office

International Greenhouse Partnerships

Capacity Building (cont.)

- Methodological Workbooks
 - practical guidance on project baselines and monitoring prepared by consultant experts
 - five workbooks prepared for energy sector projects
 - renewable-based electricity
 - 🖛 fossil-based electricity
 - energy efficiency in industry
 - energy efficiency in commercial buildings
 - 🛥 fugitive emissions
 - two workbooks in preparation
 - ☞ LULUCF
 - transportation





Activities Implemented Jointly (AIJ) pilot phase

- Opportunity to gain experience in advance of CDM
- Over 140 AIJ projects established worldwide
- Over 48 countries involved, including 37 countries hosting projects
- 15 AIJ projects involve forest preservation, reforestation or restoration





IGP Program

- **Project** Assistance
- IGP Office provides financial assistance for AIJ/CDM projects for Australian based organisations on a competitive basis
 - projects need to be endorsed as AIJ/CDM by the relevant host country
- Approved Program funding can be used for
 covering additional transaction costs
 - capacity building exercised with host countries



IGP Program

 To date, 13 projects endorsed in 7 countries
 Malaysia, Indonesia, Viet Nam, Fiji, Solomon Islands, Mauritius, Chile

Other projects under negotiation

AIJ Projects



IGP Program

- **AIJ Projects**
- Vietnam
 - increased carbon sequestration in improved planting stock
 - biogas for village households
- Indonesia
 - hydro/wind/solar power supply to provide electricity to a remote village in Irian Jaya
 - hybrid solar/diesel power for 14 villages
 - landfill gas capture and utilisation



IGP Program

- Malaysia
 Iandfill gas capture and combustion
- Solomon Islands

Fiji

AIJ Projects

- micro hydro power for two villages
- air conditioner efficiency project with particular emphasis on government buildings
- photovoltaic power supply system
 energy efficiency in cement industry



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IGP Program

AIJ Projects

Mauritius

photovoltaic power supply

• fuel efficiency improvement in oil-fired power station

Chile

 reduce leakage from gas pipelines, fuel oil conversion to natural gas, energy efficiency improvements





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Conclusions

- Under the Kyoto Protocol, developed countries have agreed to take on emission targets at significant economic cost
- Kyoto flexibility mechanisms (incl. CDM, JI) need to be cost effective and attractive to the private sector
- If sinks projects are to be included in the CDM and JI, it will be essential to ensure they deliver real emission mitigation benefits
 To facilitate the implementation of the CDM and JI, the IGP Office is:
 - undertaking methodological work to ensure projects deliver real emission mitigation benefits
 - undertaking capacity building activities, particularly for non-Annex II countries
 - establishing collaborative projects to gain experience

6-6 Presentation by Sr. Claudio Forner, Advisor, Ministerio del Ambiente, Colombia

Sr. Claudio Forner commenced his presentation by thanking Dr. Kobayashi, Chairman of the Forum, and Board Chairman of JIFPRO, Mr. Akiyama. Sr. Claudio Forner said that Colombia, despite various domestic problems, had actively participated in the UNFCCC and Ministerio del Ambiente was the focal ministry, having developed the national strategy, and had been making contributions to the international community through especially economic and financial analysis of CDM.

Sr. Forner's presentation was done based on the attached Forum Paper 7; he outlined the contents of the paper which had been focused on the permanence problem and the way to cope with it.

Firstly, Sr. Forner reiterated that the Kyoto Protocol had set GHGs reduction target for Annex I countries and provided for three flexible mechanisms, one of which was CDM.

It was also explained that CDM had two objectives: one was to assist Annex I countries to meet the GHGs reduction target; and another was to facilitate developing countries to achieve sustainable development.

Secondly, Sr. Forner said that forest, which was source as well as sink of CO2, was an important factor in the global carbon cycle and this factor had been duly written in the Kyoto Protocol.

Thirdly, Sr. Forner said that absorbing CO2 through re-afforestation would be a cost-effective way to reduce emissions and it had other additional benefits, like contribution to sound watershed manegement.

He said, however, there were several technical problems to solve in including LULUCF, especially re-afforestation projects in CDM.

Fourthly, Sr. Forner said that at this Forum he would concentrate on talking on a proposal to solve the permanence problem associated with inclusion of LULUCF in CDM. The permanence problem, according to Sr. Forner, is the problem that forests, which store carbon, always had possibility to release it due to insect/ desease damage, forest fire, and so on. The aspect of the permanence problem was also associated with forest harvesting, he said.

Fifthly, Sr. Claudio Forner explained about the Expiring CERs, which was the Colombian proposal to solve the permanence problem.

This proposal, in other words, concerned issuing CERs with time limit. The effective period of CERs, in this case, is the period during which carbon is stored. This proposal was, according to Sr. Forner, in yet other words, the provisional 'license' in emissions reduction and had a role to buy time till more effective way to reduce emissions would be found.

Sr. Forner said the details of the proposal were explained in the Forum Paper 7 and said that any questions were welcome.

Finally, Sr. Claudio Forner said that this proposal would facilitate inclusion of LULUCF in CDM and as such would provide incentive to enhance re-afforestation globally.

FORUM PAPER 7

Special considerations regarding the 'expiring CERs' proposal

Javier Blanco $^{\Psi}$ Claudio Forner^{*}

The Ministry of the Environment, Colombia

The present paper was written to be presented in the International Forum on Enhancement of Japan's Private Sector's Overseas Re-afforesttion Cooperation'. The findings, interpretations and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the view of the Ministry of the Environment or the Government of Colombia.

1. Introduction

The Climate Change Convention

The United Nations Framework Convention on Climate Change (UNFCC) was adopted on the Rio earth Summit in 1992 with the objective of stabilizing Greenhouse Gas (GHG) emissions to a level that would, to some extent, mitigate adverse effects of climate change. The Kyoto protocol establishes quantified emission reduction commitments for industrialized countries (referred as Annex I countries). The agreed target is to reduce aggregate emissions of Annex I countries to a level below 5% of that one occurring in 1990, during a commitment period, which will run from 2008 to 2013. In addition, the Kyoto protocol also established three flexibility mechanisms which Annex I countries might use to comply with their commitments. The Clean Development Mechanism (CDM) is one of such mechanisms and it refers to projects that are implemented in non-Annex I parties with two main objectives:

- a) 'To assist parties not included in the Annex I in achieving sustainable development; and
- b) to assist parties included in the Annex I in achieving compliance' (UNFCCC Secretariat 1998).

The CDM allows Annex I countries to implement projects that result in certified emissions reductions (CERs) in a Non Annex I country, and use these CERs to meet its commitments acquired under the Kyoto Protocol. CDM projects must be implemented on the basis of real, measurable and long-term benefits related to the mitigation of

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climate change. Moreover, the accrued reductions must be additional to any that would have occurred in the absence of the project activity (See Kyoto Protocol, article 12).

Forests and Climate Change

Given that the climate change problem arises from the accumulation of Greenhouse Gases (GHG) in the atmosphere, and that CO2 can be thought of as the most relevant of these gases, the problem can be studied on the basis of the global carbon cycle. The carbon cycle represents a model of stocks and flows between emitting agents (for example the industry, respiration of biological communities, etc.), sequestrating agents (primary production of forests, the ocean, etc) and the pools. The interaction between pools, in other words, the change in stock of a given pool represents a flow. The main carbon pools on earth are the atmosphere, the ocean and the biosphere as they accumulate the highest amount of carbon (see Table 1).

The fluxes of carbon between the pools are caused both by natural and anthropogenic forces. Anthropogenic forces that increase the flux of carbon from the biosphere to the atmosphere include the burning of fossil fuels, some industrial activities such as cement production and activities related to land use (deforestation and agriculture). On the other hand, activities that increase the flux of carbon from the atmosphere into the biosphere include afforestation and reforestation, among others.

Sequestration by primary productivity and the amount of carbon in the biosphere's biomass do represent both in flow and in stock an important input to the global carbon balance, as can be seen on Table 1. According to the IPCC¹ special report on Land Use, land Use Change and Forestry (LULUCF), the flow of carbon sequestration from primary productivity is approximately 0.7 GtC/year. As well, the stock stored in both the soil and the organic structure of the organisms is 2477 GtC. It is important to emphasize that the potential may increase as areas are devoted to reforestation, afforestation and sustainable wood production. On the other hand, the actual scenario shows a world with high deforestation rates (see Sizer 1999); deforestation itself has proven to be the most important source of anthropogenic GHG emissions in the developing world (see Watson *et al.* 2000; Sizer 1999).

As shown in Table 1, anthropogenic sources, especially those ones coming from industrial, energetic and land use activities represent an important input to the increase of atmospheric GHG concentrations. On the other hand, capturing activities including both anthropogenic land use change activities and biosphere primary production counteract to the previous activities by reducing the concentration of GHG in the atmosphere. According to the IPCC report on LULUCF, gross primary production of the biosphere is estimated to be 120 Gt C per year (Watson *et al.* 2000:34). Some scientists suggest that, given the actual and future expected trends of forest growth, these systems could serve as a sink for about half the expected carbon dioxide emissions from fossil fuel combustion (see DeLucia and Schlesinger 1999).

¹ This report was formally requested by the VIII session of the Subsidiary Body for Scientific and Technological Advice (SBSTA) to the Intergovernmental Panel of Climate Change in 1998 and was presented in the XII session of the SBSTA in Bonn.

Stocks	GtC	GtCO2
1. Atmosphere	760	198,26
2. Soil	466	121,57
3. Vegetation	2011	524,61
4. Ocean	39000	10173,91
Total	42237	11018,35
Emission flows	GtC/y	GtCO2
5. Respiration of ecosystems	60	15,65
6. Fuel and Cement production	6,3	1,64
7. Land use emissions	1,6	0,42
Total	67,9	17,71
Sequestration flows	GtC/y	GtCO2
8. Vegetation	61,4	16,02
9. Soil Uptake	0,5	0,13
10. Ocean flows	2,3	0,60
Total	64,2	16,75

Table 1. The Global carbon Cycle Numbers

Source: calculated based on Watson et al. 2000

The role of forests in the global carbon cycle is important as they represent both sinks-(primary production) and sources of emissions (deforestation), or as Brown *et al.* (1998: 164) suggest, forests play a double role in the carbon cycle. They conclude that 'protecting, restoring and improving the management of forests can help slow climate change'. Furthermore, Olander (2000:9) identifies three main roles of forests in influencing the Global Carbon Cycle. First, prevention of deforestation projects might reduce emissions by sources, given the high emissions in third world countries from land conversión and land degradation; second, enhancing the capturing capacity of forests through management and reforestation can certainly reduce on a temporary basis the amount of carbon in the atmosphere; and third, fossil substitution using tree biomass as burning fuel. Acknowledging this fact, the LULUCF sector has been included in the Kyoto Protocol explicitly in articles 3.3 (reforestation, afforestation and deforestation), 3.4 (additional activities) and 3.7 (assigned amounts) related with the accountability and emissions reduction of industrialized countries.

On the other hand, it is important to take into account the many benefits derived from the implementation of LULUCF projects in developing countries. Apart from the clear benefits regarding the atmosphere, these type of projects bring social, environmental and economic benefits to local communities, such as protecting watersheds, enhancing biodiversity, providing economic alternatives and preventing land degradation, among others. It is important to highlight that the resulting social, environmental and economic benefits are without a doubt, part of the objectives of the CDM itself, as they represent inputs to the path to achieving sustainable development.

Notwithstanding the above, there has been a wide and long discussion regarding the eligibility of projects that would be included under the CDM (which as well is the only mechanism that allows the participation of developing countries in the Kyoto Protocol). The discussion has been mainly centered on the difference between reducing emission projects (such as fossil fuel substitution) and sequestering GHG projects (forestry and other land use type projects). Arguments against the inclusion of sequestering types of projects range from legal, scientific, social and technical ones. Brown *et al.* summarize these concerns in: a) unintended negative consequences (such as impacts on social development, permanence and others); b) project eligibility and measurement (technical aspects and uncertainties); and c) tracking and certification (monitoring and risk)(1998: 165)

The present paper will only be focused on a specific issue, which is considered to be one of the main obstacles for the inclusion of LULUCF projects under the CDM: the permanence problem. To do so, section two presents an in depth discussion of the permanence problem in the context of climate change negotiations. The discussion will be followed by the proposal² of expiring CERs on section three, which was formally presented during the XIII SBSTA in Lyon by the Colombian delegation (The Ministry of the Environment, Colombia 2000). Under the context of expiring CERs, section four will analyze the market and price implications of non-permanent CERs. Based on some international market models, this section will discuss which are the implications of a new CER market and how equilibrium prices for expiring CERs can be forecasted. Finally, section five discusses some of the implications of the proposal at the project level including establishing optimal project lifetimes and land use options for the project proponent once the project lifetime has expired.

2. The permanence problem

Forestry and generally all LULUCF CDM projects have been questioned on the grounds that it is very unlikely that they can generate long term benefits as climate change mitigation options. This obeys to the fact that natural ecosystems, and in this case, forest ecosystems, are inherently dynamic systems (see Brown *et al.* 1998: 171); for this reason, the carbon storage on forest is vulnerable to be re-emitted into the atmosphere in the future. Furthermore, carbon stored is under continuous risk during the lifetime of the project, given the possibility of pests, fire and other natural or anthropogenic causes.

On the other hand, when a forestry project finishes, there is no guarantee that the carbon will remain stored as biomass for perpetuity. In other words, projects which have a finite lifetime will not assure that the stock of carbon will remain in the trees, as both risks of re-emission and the need for land use change, will represent potential emissions. Both sources of permanence, that is, risk during the lifetime of the project and reemission of capture after it, do in fact contravene the ultimate objective of the Climate Change Convention. Conversely, this fact brings up a key question, which has been considered as an important issue when the inclusion of forestry projects in the CDM is

² A variant of the proposal was presented by Chomitz 2000.

studied: For how long should projects be kept in place in order to yield real benefits? (see Mulongov 1998:19). This question will be addressed in section five.

In contrast, when an energy project reduces a ton of CO2 emissions below a validated baseline, that ton of CO2 is permanently prevented from ever being emitted into the atmosphere. Even if the project stops at a certain point in time, the emission reductions have already occurred and therefore, there is no risk of the re-emission of the amount of carbon that has already been reduced.

In the context of the Kyoto Protocol, an energy CDM project works as follows:

- 1. An Annex I country develops a CDM project in a Non-Annex I country.
- 2. The project results in a certified emissions reduction.
- 3. The atmosphere is indifferent on where the reduction took place.
- 4. The Annex I country uses the resulting CERs to comply and hence, it is allowed to emit the same amount of carbon.
- 5. If the project stops, then the reductions have already taken place and no CERs will be certified from that point in time and on.

In the case of a LULUCF CDM project, the case is as follows:

- 1. An Annex I country develops a forestry project in a Non-Annex I country.
- 2. The project results in a certified carbon capture.
- 3. The atmosphere is indifferent on an emission reduction or a capture as they both will result in the same carbon concentration change on it.
- 4. The Annex I country uses the resulting CERs to comply and hence, it is allowed to emit the same amount of carbon.
- 5. However, in the case of a LULUCF project, the carbon captured could be released in the future and consequently increase the carbon concentration in the atmosphere, while the Annex I emission that was allowed will still remains in the atmosphere.

Some solutions have been proposed to address this concern. Approaches include permanent enforcing, credit discounting, specific liability rules, minimum period for project lifetime, CERs buffers for risk management and others. Solutions such as permanently enforcing a carbon capture project have been severely criticized because they could threaten the sovereignty of the host country (as there is a need for continuous monitoring), or even its food security (given that no land use change will be allowed). Solutions that propose a minimum project lifetime still do not resolve completely the fact that the stored carbon may eventually be emitted in the future and the problem of permanence still remains.

3. The expiring CERs proposal

3.1 Expiring CERs

The problem of permanence arises as CERs generated from LULUCF CDM projects were thought to give a permanent license of emission to the acquiring party. Given that LULUCF activities are non-permanent, the expiring CERs proposal solves the problem by establishing a non-permanent license to emit (or a temporary license to emit) to the party that acquires the associated CERs.

In other words, the expiring CERs proposal establishes a temporary license to emit by placing an expiration time to the associated CERs generated by a LULUCF project. Once the CERs have expired, the acquiring party will have to replace the equivalent amount of CO2 with permanent CERs, new expiring ones or an extra emission reduction (see figure 1).

It is important to state that if the carbon is released within the project lifetime, the project proponent is fully liable for the CERs that have been used for compliance. Therefore the project should include a risk mitigation strategy in order to replace unexpected emissions with equivalent CERs³. The proposal gives the flexibility to the project proponent to establish the period of time in which the carbon will remained stored and consequently, the time in which the land will be under periodical monitoring.



Figure 1 The permanence proposal

³ Several mechanisms are available for dealing with the risk of emissions, such as CERs buffers and insurances.

The new process would be as follows: (see Graph 1)

- 1. An Annex I country develops a forestry project in a Non-Annex I country.
- 2. The project results in a certified carbon capture for a specific period of time.
- 3. The atmosphere is indifferent on an emission reduction or a temporary capture as they both result in the same carbon balance.
- 4. The Annex I country uses the resulting CERs to comply and hence, it is allowed to emit the same amount of carbon which was stored by the project for a period equal to the one in which the capture remained stored in the biomass.
- 5. Once the lifetime of the project has finished, the land is free from any liability and the carbon may be released.
- 6. From the standing point of the acquiring party, once the licensed period has expired (that is, the validity period of the generated CERs), the acquiring party should replace the same amount of CO2 with an equivalent emission reduction or by acquiring a new CER.

In addition, the proposal does not establish a strict relation between the date in which the CERs are certified and the date when they are use for compliance (or retired to a cancellation account). In this respect, CERs are fully bankable and can be retired whenever the acquiring party decides to do so.

This scheme guarantees that the potential future release of the captured carbon will be secured as the acquiring party will still be liable for the reduction when the CERs expire. Moreover, as the CERs are certified ex – post and the monitoring of the carbon is made during the lifetime of the project, it is assured that the validity period of each CER corresponds to the real time in which the carbon remained sequestered as biomass. The proposal ensures a permanent reduction in the long run given that in the future, parties will not only have to comply with new commitments, but also replace the non-permanent CERs with equivalent emission reductions.

3.2 An example

The above section has identified some terms that would be useful to define before setting up example:

Lifetime of the project (N): Total amount of years of the project.

<u>CER generation date (t)</u>: Year of the project in which the CER was produced (certified) <u>Validity period (VP)</u>: Amount of years that the CER will be valid for

<u>CER retire date</u>: Date in which an acquiring party used the CER to comply.

Expiring date: Date in which the CERs will have to be replaced. This date is calculated by adding the validity period to the date in which the CER was retired.

The example will be based on the following assumptions:

- A reforestation project is set up for 25 years
- Each year, the forest will sequester an amount of 100 tons of carbon, from year 1 (at the end) to year 25 (also at the end).

- Unless the international reglamentation of the Kyoto Protocol establishes something different, for the purpose of this exercise, the certification will occur annually and therefore, the project will yield a total amount of 100 certified CERs of 1 ton of carbon each at the end of each year.



The validity period of each CER will depend on the period of time in which the carbon will remain as standing biomass within the lifetime of the project. This is the same as saying that the validity period depends on the time that the project proponent assures that the capture of CO2 will not be released. For the purpose of this example we assume that the validity period will be based on the difference between the date of certification and the end of the project according to the following formula:

Validity period (VP)= N-t

Where:

N = lifetime of the project in years t = the year of the project in which the CERs are certified.

For example a CER, which was generated on year nine will be valid for sixteen years (25 - 9 = 16). The flow of CERs for the selected project is stated on Table 2.

Vear	Amount of CERs	Validity
1 Cai	(Ton of CO2)	neriod (vears)
		VP=N_t
1	100	24
2	100	24
2	100	25
3	100	22
4	100	21
3	100	20
6	100	19
7	100	18
8	100	17
9	100	16
10	100	15
11	100	14
12	100	13
13	100	12
14	100	11
15	100	10
16	100	9
17	100	8
18	100	7
19	100	6
20	100	5
21	100	4
22	100	3
23	100	2
24	100	1
25	100	0

Table 2. CER Budget for the Project

As a result, the project produces a total amount of 2400 CERs of 1 ton each. Because the validity period of each CER is different, the market price for each will be different as well. The market price implications will be discussed in the next section. Please do note that the last vintage of CERs, which is produced at the end of year 25, will have a validity period of 0 years. The validity period is 0 because after year 25, the project ends and this last capture has not remained as biomass before the project lifetime finishes. As will be stated later, this represents an incentive for the project proponent to extend the lifetime of the project.

Having stated above that there is no strict relation between the date in which CERs were certified and the date in which they are used for compliance, the next step is to determine the expiration date of each expiring CER. This process will depend on when will the CER be retired. The acquirer of the CER may choose when to retire the CER, according to its needs, and recognizing that he/she will have to replace that CER when it expires. The expiring date will be determined by the date in which the CERs is retired (e.g. added to its assigned amount) and the validity period.

Following this rationale if a CER that has a validity period of 5 years⁴, was retired on the 5th of may 2008, then, the expiring date will be the 5th of may 2013 (the date of retirement plus the validity period). Consequently, in this date, the party shall replace the expired CER either with a permanent option (a permanent CER or an equivalent internal emission reduction) or a new expiring CER.

4. Valuing time and forecasting the value of expiring CERs: A market approach

The Kyoto Protocol and its flexibility mechanisms can be seen as the establishment of a tradable emission permits (TEP) market. This market appears with the creation of a single commodity, based on the carbon units referred in articles 17 (part of assigned amounts), 6 (emissions reduction units) and 12 (certified emissions reductions) of the Kyoto Protocol. All these units are fully fungible, tradable and can be used by Annex I parties to comply with their reduction commitments (see Petsonk *et al.* 1998). For the purpose of this paper they will be named "carbon permits" in general.

With the appearance of the commitments of the Kyoto Protocol, the demand for carbon permits is created. Each country will have two options for compliance: make the emissions reduction internally or buy carbon permits in the international market. On the other hand, all the countries, Annex I and Non Annex I, that have low cost emissions reduction options can offer in the international market carbon permits. This constitutes the supply of carbon permits in the market. The equilibrium price is determined by the interaction of the demand and the supply curves, which as well are determined by the specific marginal costs of reduction in each country (Annex I countries providing both supply and demand, and Non-annex I providing only the supply).

Given the opportunity for carbon markets with the future ratification of the Kyoto protocol, there has been a wide range of efforts for modeling prices of carbon permits in general. Many of the developed models include switches for accounting regulatory aspects such as supplementarity, the inclusion of forests and others. It is worth to mention some of the most important studies that have ended in a market model using the above structure: see Bernstein et al 1999, Brown *et al.* 1999, Edmonds J., M. Scott. 1999. , Ellerman *et al.* 1998, Holtsmark 1998, Manne and Richels 1999, Sands *et al.* 1999, Van der Mensbrugghe 1998.

With the inclusion of the expiring CERs in the Climate Change scenario, a new type of carbon permit appears. The new carbon permits have the characteristic of being non-permanent and therefore will have a different price. It has already been stated that the present proposal represents a temporary license to emit, and in consequence, parties interested in acquiring expiring CERs would be in reality buying time or, in other words, postponing real reductions to a time in which technology will be developed enough to make permanent reductions more cost effective.

Parties, as rational economic agents, would only be interested in buying expiring CERs if it would be cheaper (or more efficient) to do the reductions in the future. The willingness to pay for expiring CERs could be calculated by the difference between the

⁴ This means that, as calculated in table 2, the CER was generated on the year 20 of the project.

cost of compliance today and the expectations of the cost of compliance in the future. Acquiring parties will take a decision according to the following decision rule:

The buyer will be indifferent of buying permanent or temporary CERs if the cost of compliance today is equal or less to the expected cost of compliance in the future plus the cost of delaying the compliance (e.g. buying the expiring CERs), or:

PPC = PEC + NPV (EPPC)

Where

PPC is the price for a permanent CER PEC is the price for an expiring CER

NPV (EPPC) is the net present value of the expected price of a permanent CER in the future

Therefore, the acquiring party will be willing to pay for an expiring CER no more than:

WTP (EC) = PPC - NPV (EPPC)

Where

WTP (EC) = is to the willingness to pay for an expiring CER

Assuming that the price for compliance will remain constant in time, the new price can be calculated by subtracting the discounted price for permanent CERs to the actual price for permanent ones. This can be considered as the worst case scenario, in which expectations about the future cost for compliance remain constant. Providing that in the future technology development will make options at a lower cost, expectations about future cost can rise the price for expiring CERs. The estimation is as follows:

WTP (EC) = PPC - NPV (PPC), or

$$WTP(EC_i) = PPC - \frac{PPC}{(1+r)^i}$$

Where,

WTP (ECi) = the willingness to pay for an expiring CER valid for i years

This formula shows that, as costs are delayed into the future, then the net present value of the expected cost for compliance will decrease, increasing the willingness to pay for the expiring CER, and consequently raising its price. In other words, as the validity period increases the willingness to pay for expiring CERs rise. Intuitively it can be said that for a long enough validity period, the willingness to pay expiring CER will be the same as for a permanent one (which is not the same as saying that the price will be the same, as marginal cost curves will surely differ).

The interaction of willingness to pay and the marginal cost of delivering an expiring CER with a specific validity period will determine its final market price. The above

context can be used to reformulate the market models, which have already been developed.

5. Implications at the project level

Now lets analyze the proposal from the standing point of a project proponent. Given the new context in which forestry projects yield non-temporary CERs, and consequently, the differential price of the new expiring CERs, the impact on prices will have as well an impact on the total revenue from single projects. Noting as well that the project proponent may choose the length in which the project compromises to keep a certain amount of carbon stored, the act of choosing a specific lifetime for the project is a critical stage in the project design.

As was seen on the previous section, the longer the period of validity of a given expiring CER, the higher its market price. On the other hand, extending the lifetime of the project increases the costs, as there is a need for periodic monitoring, longer insurance premium, opportunity costs of land and other factors. On the other hand, longer lifetime of a project will increase the price that is given to the generated CERs. Under these circumstances, there is a need to establish an optimal length for the project. The project proponent might choose to study the establishment of the optimal period by applying optimal control theory, given a production a cost functions and the respective restrictions.

Assuming that revenue from the project will only accrue to the selling of expiring CERs, the project proponent can find the optimal lifetime of the project based on the revenue from selling CERs with different prices and on the costs of producing them. In mathematical terms, the following formula describes the net revenue function, which will be maximized to increase profits:

$$\max NR = \sum_{i=0}^{N} \frac{CERi * Pi}{(1+r)^{i}} - \left[C_{f} + \sum_{i=0}^{N} \frac{C_{mi}}{(1+r)^{i}} + cv * \sum_{i=0}^{N} \frac{CERi}{(1+r)^{i}} \right]$$

s.t. $CERi \le F(t) * K$

Where

NR = Net revenue from the project

CERi = The amount of CERs certified at time i

Pi = The price for the CERs certified at time i, according to the given validity period (N-t). Pi is a price function <math>Pi = G(N-i)

 $\mathbf{r} = \mathbf{the interest rate}$

Cf = Fixed cost incurred at time 0

Cmi = Cost of monitoring, insurance etc, incurred annually

Cv = variable cost of maintenance of the project

F(.) = biomass production function of the selected species for all the project area.

K = The amount of carbon per unit of biomass

G(j) = Market price of expiring CERs of validity period j.

The left part of the equation refers to the revenues from selling the CERs, noting that each one will have a different price according to its validity period. The right side of the equation includes the cost function, considering both fixed and variable costs and which are determined by the lifetime of the project. These costs can be seen as abatement costs or, in this case, sequestration costs (see Holtsmark 1998). The maximizing function will lead the project proponent to choose the optimal lifetime of the project as well as the optimal amount of CERs to be certified. The analysis will result in the maximum net revenue (see Halsnaes *et al.* 1999:18).

Intuitively the expiring CERs proposal creates an incentive for extending the typical lifetime of the project (e.g. before the forest reaches maturity) because the project proponent will be interested in increasing the price of the vintage of CERs that is produced when the biomass production function reaches a maximum⁵.

The conditions for maximizing the net revenue function will be specific for each type of project. The CER production function will be based on the specific growth function of a given type of forest or forest plantation and will also depend on the sowing conditions and inputs to the process (nutrients, soil, water availability, etc.). On the other hand, the cost function will also depend on the prices of the mentioned inputs, the opportunity cost of land, labor and technology, etc.

Before finishing the present paper, it is worth mentioning what happens to a specific project after the lifetime has finished. There are two primary options for the project proponent to decide what to do with the land; the first one is to extend the lifetime of the project and the second one is to stop the project.

The decision of extending the lifetime of the project has only sense if the project proponent wants to extend the validity period of the CERs that are generated in the last years, now that only those ones who will be generated after the extension, will be benefited. In this case, the analysis of extension will be very similar to the analysis of finding an optimal time for the project. The project proponent will focus on the opportunity cost of land, on the amount of carbon that will be captured each year⁶, the costs of extending the project and the benefits derived from the extra price (premium) that the owner will get for each CER that extends its validity period.

If the owner decides to stop the project, then, the land will be released from liability, and any emission caused by deforestation is compensated, as the responsibility of the permanent reduction lies on the acquiring party. As the land is free from liability, the owner of the land might choose to change its use or leave the land as it is. The last option is important to be considered, as there are many projects which, apart from generating economic benefits in terms of CERs, they also generate social and environmental benefits. In fact, there might be the case that a great amount of

⁵ Typically, the biomass production function is of a logistic type where in the first years the amount of biomass stored is small. The function reaches a maximum at the middle point between the initial date and the time in which the forest reaches maturity. From this point and on, the forest will grow at a decreasing rate until it stabilizes.

⁶ It is important to remember again the logistic growth curve of forests. At the end of the project, the sequestration might have became zero and therefore there might be no CER generation. The project proponent might also choose to account for new pools, providing reglamentation of the Kyoto Protocol allows him/her to do so.

restoration and sustainable wood production projects that became viable due to the CER benefits. In this case, planted forests will remain, as they will generate a continuous flow of environmental, social and even economic benefits into the population.

Another important option with the land is that, providing regulation of the CDM allows it, the project proponent might choose to formulate a new forestry project in the land. It is important to note that a single area of land could be used through time to implement a continuous set of CDM projects that can assure a long-term reduction alternative. The CERs generated from the different project on the same land will still be temporary and will have to be replaced on the calculated expiring date. From the standing point of the atmosphere, this creates extra benefits as a great amount of carbon has the potential to remain for a longer period of time out from the atmosphere as wood products. These benefits will not be accounted for.

6. Conclusions

In this paper we have analyzed in some detail the expiring CER proposal that deals with the concerns of permanence of the LULUCF projects in the Clean Development Mechanism. The proposal is based on a liability scheme that transfers the nonpermanence characteristic of a forestry project to the permits or allowances it generates. The result is a temporary license that offset the future releases from non-permanent projects. The proposal includes a rigorous liability scheme in which both the project proponent and the acquiring party have a shared but differentiated responsibility of the stored carbon. The project proponent will be responsible and liable for the capture and/or emissions of the capture during the lifetime of the project, assuring a net environmental benefit. The acquiring party will be responsible for a permanent benefit, as it is represented by the replacement of an expiring CER.

In the short run, the proposal facilitates compliance as it makes cost-effective options available in the market. Furthermore, the many benefits derived from LULUCF projects in developing countries are also important to be taken into account, as LULUCF represent an alternative for ecosystem restoration, watershed protection, labor and others. In the long run, the proposal is compatible with the idea of real reductions as it clearly states the liability of these reductions to the acquiring parties. In the long run it also gives some time for technology to develop at a level in which new options become cost-effective. As a result, the proposal of the expiring CERs deals with the concern of permanence while at the same it might help to achieve article 12 objectives and ease the path to the ultimate objective of the Climate Change Convention.

Secondly, we analyzed the effects of the proposal in the carbon permit market. Understanding the proposal as a temporary license to emit, a new carbon market commodity appears, concluding that this non-permanent carbon permits will have a differentiated price that will depend mainly in the difference between the present cost for compliance and the expected cost of compliance in the future. Because a temporary license to emit implies a postponement of compliance cost, the price of the expiring CERs will increase according to the validity period. Economic agents will definitively be interested in postponing costs due both to opportunity cost of money and expected future costs of compliance to be lower.

The third analysis was centered on the implications of the expiring CERs proposal at the project level. Given that there is a differentiated price of the CERs according to the validity period, the impact on the net revenue of the project is clear. Noting that the validity period depends on the length of the project, there is an incentive for project proponents to extend the lifetime of single projects. This reveals an important question on which is the best length of time for the project. The paper analyzed the general context and opened a new path to understand the ways to maximize profits. Optimal control theory can be understood as an important tool for answering this question.

Finally, the paper identified some of the incentives for extending the lifetime of the project and the resulting collateral benefits from this extension. In the context of the Climate Change Convention, long-term benefits are a priority of the projects. Forestry projects offer a wide range of options and incentives for extending lifetime of projects or keeping forests standing or implementing a subsequent series of CDM projects on a single area of land.

The expiring CER proposal can make viable the use of forests for climate change mitigation, as it represents a neutral alternative from the standing point of the atmosphere. It is also important to take into account that value, which is added to forests as the GHG capturing service, is acknowledged. Furthermore, making viable forests under the CDM brings economic alternatives to communities throughout the developing world.

The paper has identified and opened new directions and needs for research, that can be addressed in the future. The authors expect that the proposal will be further developed in order to be fully compatible and be part of the reglamentation of the Kyoto Protocol.

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Special considerations regarding the 'Expiring CERs' proposal

Presented by: Claudio Forner
Contents

- Introduction: UNFCCC and forests
- The problem of permanence
- Expiring CERs
- Market implications
- Project level implications
- Conclusions

UNFCCC and forests

- UNFCCC throught the Kyoto protocol establishes emission reduction comitments.
- Annex I parties can reduce internally or use three flexibility mechanisms.
- CDM is one of such mechanisms:
 - Help parties in achieving reduction targets
 - Contribute to sustainable development of the developing world

The role of forests in the Climate Change Scenario

- Forests are an important component of the Carbon Global Cycle, as they are both a sink and a source.
- CDM objectives:
 - Helping parties to reach targets (cost effective alternative)
 - Generation of a wide range of collateral benefits to non-Annex I parties (in terms of goods and services), such as protection of watersheds, biodiversity.



The Problem of permanence

- An Annex I Party develops a project on a nonannex I party
- The project results in a certified carbon capture
- Annex I party uses the CER to comply and is allowed to emit the same amount of carbon into the atmosphere.
- When the project finishes, the carbon capture is in risk of release, or there is no assurance of the perpetuity of it.

7. Discussions on the Key Note Address and the Presentations

<u>Comment/Question by Mr. Yamanaka, Environment Office, Kansai Electric Power</u> <u>Company</u>:

Mr. Yamanaka said he would support what Dr. Plodprasop Suraswadi, DG of RFD, Thailand ,had said, i.e., re-afforestation itself has its own real value and whether it would be included in CDM or not had in a way secondary importance.

He, however, said nevertheless for the private sector to expand forestry related cooperation, LULUCF to be included in CDM would play an important role as an incentive.

Mr. Yamanaka's first question was directed to Mr.Mikihiro Inoue and the question was whether very precise data would be necessary to facilitate inclusion of LULUCF in CDM or not..

Mr. Yamanaka's second question was directed to Dr. Untung Iskandar about the way to prevent illegal cutting. This question was raised in relation to 'permanence' problem.

Mr. Inoue's response:

Mr. Inoue, before answering the question, said that it was very important that LULUCF be included in CDM as ,otherwise, investment would be entirely diverted to other sectors which were included in CDM.

Mr. Inoue said that it was true that survey and measuring would be comparatively difficult in LULUCF, and as the results, viable data were lacking.

He said that COP had not decided about such matters as how to set baseline, the way of measurement/culculation, but the global consensus was to accumulate real experiences/ examples and to discuss further based on these.

Mr. Inoue said that if a lot of money was spent, we would be able to collect accurate data but he believed that we had to keep in mind the cost-effectiveness of surveying/measuring.

Dr. Untung Iskandar's response:

Dr. untung Iskandar, before answering the question, thanked the Kansai Electric Power Company for its cooperation with Gadja Madah University of Indonesia.

Dr. iskandar said the important factors to prevent illegal cutting were upgrading the community quality, government's firm stance against illegal cutting, downsizing domestic wood industry to balance demand and supply, and possibly applying timber tracking method. Dr. Iskandar added that in Indonesia such international organizations/ initiatives as SGS, Smart Wood, and WWWF were also working to conserve forests.

Comment/Question by Dr. Kobayashi of Sumitomo Forestry Company:

Dr. Kobayashi said that majority of more than 20 industrial plantation projects by Japanese pulp/paper industry had been carried out in such countries as Australia, New Zealand and Chile and that the fact, he thought, related to risk matters.

Dr. Kobayashi said that he had been engaged in various types of forestry related company activities and for the past 10 years had been responsible for a tropical rain forest rehabilitation project in Indonesia.

Under the above background and with his belief that CDM should include LULUCF, Dr.Kobayashi asked whether there were effective ways to protect projects from land and community related disputes.

The question was responded by Dr. Untung Iskandar and by Sr. Claudio Forner.

Dr. Untung Iskandar's response:

Dr.Iskandar said that it was true that there had not been much investment in Indonesia by Japanese pulp/paper industry.

Dr. Iskandar said further that it was true there were community and people related problem and in the case of Indonesia transition to decentralized forest administration had added certain confusion.

He said that simple solution would not exist as people/land matters were very complicated ones.

Dr. Iskandar emphasized that local communities should be involved from the initial stage of project.

Sr. Claudio Forner's response:

Sr. Claudio Forner said that also in Colombia people related problems were abundant. Sr. Forner, nevertheless, said the roblems might offer an opportunity of setting up a project, involving local people, community, NGOs, and government, and offer an opportunity to improve living conditions of people. Sr. Forner said that a rule to regulate the relation between community and investor had to be clearly established at early stage of a project.

He said that there were two types of models: One type is the host induced projects, in which main initiator of the project is community and they sell CERs; Another type is bilateral project between community and investor.

With regard to land problem, Sr.Forner said that the problem might be solved through Colombian proposal in relation to the 'Permanence' issue.

Question by Mr. Sakasegawa of Tokyo University:

Mr. Sakasegawa said that there had not been much reference to fast growing tree species in the presentation.

He said in some cases fast growing trees might be useful, like Melaleuca, which was resitant to forest fire.

Mr. Sakasegawa wished to hear what foreign participants thought about fast growing species. For Mr. Sakasegawa's question, Dr, Pham Quang Minh of Vietnam responded.

Dr. Pham Quang Minh's response:

Dr. Pham Quang Minh said that in Vietnam both indigenous and fast growing tree species had been used for re-afforestation. Dr. Minh said fast growing tree species were planted in the production forest; until a few years ago Eucalyptus species were mainly planted but recently, more acacia species had begun to be planted.

Dr. Minh said that farmers in many cases did not like pure stand of fast growing tree species and often fruit trees were mixed.

He added that Eucalyptus species had advantage of growing very fast and could be rotated several times through coppicing but had problem of hampering other vegetations' growth.

With regard to Melaleuca, Dr.Minh said that it had some problems, like the one associated with grazing.

<u>Comment by Dr. Baba of the International Society for Mangrove Ecosystems(ISME)</u>: Dr. Baba said that he would comment as a NGO(or NPO) member.

Dr. Baba said that forest is a complicated ecosystem and fast growing tree planting might be cost effective in short term but it means the duration of carbon stock would be short duration.

Dr. Baba said he believed that the way to acquire CER was important and the most important matter would be how effectively involve local people in re-afforestation and how effectively benefit the lives of local people. By taking this factor into full account, Dr. Baba said, global environment would be conserved better in the long run.

Comment by Mr. Yamanaka of Kansai Electric Power Company

Mr. Yamanaka commented in relation to Dr. Baba's comment; He said that private companies also should involve local communities in their re-afforestation projects. He said that his company's plantation in Indonesia included agro-forestry and one in Thailand included silvo-fishery.

Dr. Plodprasop Suraswadi's Comment on the relation between re-afforestation projects and local communities:

In Thailand and other South East Asian countries, local people's life linked very closely with forests; they get various material from forest, including sometimes food and herb.

Dr. Plodprasop said that 1 million to 2 million people were living illegally in the forest, half of which were foreign nationals. It was added that eviction of these people was difficult by various reasons.

Dr. Plodprasop said that under the circumstance the Government policy was to permit them to stay there in harmony with forest by limiting the area and number of people in one area, introducing agroforestry, planting fruit trees, and so on.

Dr. Plodprasop touched on a Movement called SMP, which asserted that people were most important, they could cut trees freely, got land freely, and when land became infertile move to another place; Dr. Prodopraso added that this movement were receiving some financial support from outside, including from Japanese NGO. Dr. Plodprasop said that proper judgment should be applied on this kind of movement.

Question by Ms. Fujimori of Pacific Consultant company:

Ms. Fujimori said that she read the workbooks by IGP, Australia on energy sector with great interest.

Ms. Fujimori asked Dr.Mark Stevens when the workbooks on LULUCF and transportation would be made available. She also raised question to Dr. Stevens whether the LULUCF workbook would cover the way to monitor leakage.

<u>Dr. Mark Stevens' response</u>: Dr.Mark Stevens said that there had been five workbooks issued on energy sector and they could be down loaded from the internet site, details of which would be made known during the Forum. (Internet:http://www.isr.gov.au/resources/energy.greenhouse/igp) Dr. Stevens said that the work book on LULUCF was in final stage of preparation and would be available within one month, although the exact date was not known yet.

Comment and question by Mr. Kanda of Oji Paper Company:

Mr. Kanda commented partly in relation to the earlier comment by Dr. Baba of ISME. Mr. Kanda said that there might exist some misunderstandings on industrial plantation; Mr. Kanda said although industrial plantation by pulp/paper industry was usually done on abandoned grazing land or bare land, still the good relation with the local community and local people was indispensable.

Mr. Kanda said that commercial companies to invest in tree planting meant the considerably large amount of funds had to be continuously invested without receiving any returns for long time. Mr. Kanda said that hence some kind of social forestry component was essential also in industrial plantation for pulp/paper and getting incentive by CDM sink projects was very important.

Mr. Kanda's question was about the timing of awarding credit and he asked whether it was possible to issue credit at the very beginning of a project and also asked about the replacement of CER, whether there would be possibility of getting another credit after certain period, say 10 years, after the initial credit was rewarded.

Sr. Claudio Forner responded to Mr. Kanda's questions.

Sr. Claudio Forner's response:

Sr. Claudio Forner said that private companies to pursue profits is rational and still such activities could bring about social benefits, too.

In terms of getting credit in CDM, Sr. Forner said, the essential matter was whether the activity contributed to achieving sustainable development or not.. Sr. Forner said that for private companies to set project period too long would not be feasible in terms of cost performance; and the merit of the proposal of 'Expiring CER' is, in a way, solved this problem.

Sr. Forner said there were several options for replacement of CER; if the project aimed at rehabilitate degraded bare land, the important factor would be how much carbon existed in the biomass there.

<u>Comment and question by Mr. Nakagiri of the Greening Center of Yamanashi</u> <u>Prefecture</u>:

Mr. Nakagiri said that he understood that forest was neither sink nor source of GHGs in the long term and that forest had its own merit.

Mr. Nakagiri had the impression that COP6 had not reached consensus as the Umbrella Group including Japan and Australia had insisted too much that LULUCF should be included in CDM and he wanted to hear why Japan would not make more effort in reducing emission of GHGs originated from fossil fuels and why insisted in including LULUCF in CDM.

Mr.Nakagiri understood that Australia had the national economic structure which made emissions reduction difficult; Mr. Nakagiri wanted to hear whether his understaning was correct or not.

Mr. Mikihiro Inoue and Dr. Mark Stevens responded to Mr. Nakagiri's questions.

<u>Mr. Mikihiro Inoue's response</u>:

Mr. Inoue said that Japanese Government had formulated the general policies to achieve the reduction target of 6 % and each sector was making efforts to achieve the country's obligation.

Mr. Inoue said that he was not in a position to talk officially but he said that he doubted that domestic LULUCF would account for large portion of 6 %.

Mr. Inoue said he, as a member of the Japanese Government delegation to COP6 in the Hague, attended the session for CDM.

Mr. Inoue said that he was convinced if LULUCF excluded from CDM, the sector would have disadvantage, compared with other sectors included in CDM. Mr. Inoue said that he believed that re-afforestation had its own merits independent from CDM matters but by the above reason he thought that Japan's position had been justified.

Mr. Inoue added that in case LULUCF included in CDM, further effort would be necessary in identifying and conducting appropriate survey and /measurement. In this regard, Mr. Inoue introduced JICA's cooperation with Indonesia to verify and measure CO2 absorption in the field.

Dr. Mark Stevens' response:

Dr. Stevens thanked Mr. Katagiri for his interesting question. Dr. Stevens said that Australia were making effort in every possible ways, in energy sector, through sink projects, and so on. With regard to Mr. Nakagiri's question on the structure of Industry, Dr. Stevens said that the characteristics of Australian industry was that it was heavy processing type and raw materials depending type. Dr. Stevens said that Australia were supplying materials to other countries for further processing; he added that alminium sector was still developing; LNG supply was still expanding; and steel industry was stll expanding, for instance, resulting in increasing emission of GHGs. Unlike other developed countries in which service sector were gaining more importance, Australia was different as the global supplier of materials. Dr. Stevens said that it was not justifiable to be penalized so long as Australia tried hard to make the economic activity as efficient as possible. Chairperson: Dr. Fujio Kobayashi Panelists: Sr. Claudio Forner

Sr. Claudio Forner

Dr. Ir. Ngaloken Gintings, Director, Forest Products Research Center, Indonesia

Dr. San Win, Forest Research Institute, Myanmar

- Dr. Pham Quang Minh, Head of Silviculture Division, Department for Forestry Development, Vietnam
- Mr. Pravit Chittachumunonc, Director of Silviculture Research Division, Royal Forest Department, Thailand

Dr. Mark Stevens

Dr. Masahiro Amano, Forestry and Forest Products Research institute, Japan

Chairperson's Guidance on the Panel Discussion:

Dr. Kobayashi said the panel discussion would be conducted basically as each panelist's response to the key note address, presentations and comments/questions from the floor of the first day session of the Forum.

Dr. Kobayashi said further that he would like to divide the panel discussion into three parts; in the first part he would like to ask each panelist to express what he thought about the first day session and ask those who had not done so yet, to introduce himself briefly; in the second part he would like to ask each panelist to express his view on prospect and task of forestry sector in each country; and in the third part he would like to ask each panelist to express his view on LULUCF and CDM matter.

First Part of the Panel Discussion: Panelists' response on the first day session. (Some panelists actually covered wider subjects)

Sr. Claudio Forner's comment:

Sr. Claudio Forner said that he was convinced by the first day session that we

should think globally and act locally.

Sr. Forner said that in this respect this Forum was very important to share information and to understand what the other parties were thinking.on the matter.

He said also that recognition of the importance of land use, the relation between the government and community/people, and recognition of the importance of permanence problem in relation to LULUCF had been deepened during the first day session.

Sr. Forner concluded his comments by saying that if this kind of Forum could be continued, we might be able to contribute to the matter further.

Dr. Ir. Ngaloken Gintings' Comment:

Dr.Gintings expressed his gratitude to Japanese Government and JIFPRO for the invitation to this Forum.

Dr. Gintings said that he served currently Director of the Forest Products Research Center of Indonesia.

Dr. Gintings said that by hearing the first day session he was reimpressed by the fact that forests had multiple roles and one of the roles was carbon sink role. He said, however, that he had impression that enough data/information was still lacking. The relation with local community/people, species selection, and the effectiveness of short rotation plantation in carbon sink were the other matters impressed Dr. Gintings.

Dr. Gintings went further to make explanation on the present situation of recovering forest in Indonesia.(Dr. Gintings showed several slides to the participants)

Dr. Gintings said that there were 56.9 million ha of degraded land in Indonesia, 15 million ha of which were degraded forest land.

With regard to the rehabilitation efforts, by July, 1999, 2.4 million ha were rehabilitated by planting, 2.1 million ha of which were reforestation, and 1.2 million ha were rehabilitated by regreening.

Dr. Gintings said that 10 million ha were still to be rehabilitated by tree planting, and the plan for industrial plantation was to increse it annually by 0.3 million ha, with the expected costs per ha 5 million Rupiah. Dr. Gintings added that 1 trillion Rupiah were budgeted for community planting. With regard to timber supply/demand situation in Indonesia, Dr. Gintings said the supply capacity from natural production forests was 25.5 million m3 and annual timber demand was 63 million m3 and the gap was 37.5 million m3.

Dr. Gintings, in concluding, touched on the matter of LULUCF and CDM. Dr. Gintings said that the Ministry of Forestry of Indonesia in collaboration with other Agencies concerned, had set up the position on Indonesia for COP6 in the Hague.

Dr. Gintings said that the Indonesian Government supported LULUCF to be included in CDM.

He said that forests could be source as well as sink of CO2 and said that it would be essential to get proper data on carbon sink by setting appropriate base line. Dr. Gintings said that Indonesia were trying to start AIJ projects like recently started JICA cooperating project.

Dr. Gintings, in conclusion said, that the measures should be sought that local communities and local farmers would benefit from carbon sink projects.

Dr. San Win's Comment:

Dr. San Win expressed his gratitude to JIFPRO for inviting him to the Forum. Dr. San Win said that he was working for the Forest Research Institute of Myanmar Government.

Dr. San Win said that he, by hearing the first day's session of the Forum, had the impression that many countries supported LULUCF to be included in CDM, added that he too personally supported the inclusion of LULUCF in CDM as it would lead to reducing GHGs and at the same time benefit developing countries. He said, at the same time, that he had noted that there were various technical problems to be solved.

Dr. San Win also explained about the Myanmar forestry sector. He said the National Commission for Environmental Affairs was established in 1990 to achieve the balance among culture, national heritage, and resource development for the Myanmar forests.

Dr. San Win said that the Forest Law was enacted in 1881, revised in 1902 and finally revised in 1992. He added that the Community Forest Instruction was issued in 1995 and by that local people could lease the use of degraded land for 30 years for farming and tree planting.

Dr. Pham Quang Minh's Comment:

Dr. Pham Quang Minh expressed his gratitude to having been invited to the Forum.

Dr. Minh said that he was a forester and was serving as Head of Silviculture Division of the Department for Forestry Development, Ministry of Agriculture and Rural Development.

Dr. Minh said that he had heard with great interest the first day session and had got the impression that promoting re-afforestation would be beneficial in terms of preventing global warming. He added that he had also understood that cooperation between developing countries and developed countries was important to promote re-afforestation in developing countries.

Dr. Minh said that in reality there would be various diffucult problems to solve. For instance, he said, that local farmers in mountainous areas were generally poor and did not afford to care about environment conservation or CDM.

Dr. Minh said that conflict involving land did exist in Vietnam, especially mountainous areas, and said that Government's to keep good relation with rural communities was essential for successful re-afforestation projects.

Dr. Minh said that he noted in the first day session the choice of planting species between indigenous tree species and fast growing tree species was discussed and said that we needed to pay attention to conserving biodiversity. In concluding his remarks, Dr. Pham Quang Minh said that developing countries were receiving assistance from developed countries and international

organizations and appreciated the cooperation, but nevertheless, it would be good to know what kind of cooperation was effective and what kind of cooperation was not successful.

Mr. Pravit Chittachumunonk's Comment:

Mr. Pravit Chittachumunonk expressed his gratitude for having been invited to the Forum.

Mr. Pravit said that he was Director of Silviculture research Division of Royal Forest Department of Thailand.

He said that by hearing the first day session he had got the impression that all the participants had understood well about various matters like the problem of global warming, the Framework Convention, the Kyoto Protocol, and so on.

Mr. Pravit added that aspects beyond forest and forestry related field should be

fully taken into account.

Mr. Pravit, in conclusion ,said that he wanted to hear more from Japnese private sector, including their views on why they wanted to implement re-afforestation cooperation projects, what they thought on the effects of it, and what they thought the effects of plantation on global warming.

Dr. Mark Stevens' Comment:

Dr. Mark Stevens expressed his gratitude to JIFPRO again for his participation in the Forum.

Dr. Mark Stevens said that this Forum was valuable activity and the papers presented were well balanced and had high quality.

Dr. Stevens said the papers which dealt with potentials of CDM for developing countries and the papers which dealt with technical problems of LULUCF CDM were balanced.

Dr. Stevens said that the technical discussions on CDM had been done mainly among developed countries but this Forum was different and of high value, participated by very high ranking officials from developing countries, and with presentation of valuable initiatives in developing countries.

Dr. Masahiro Amano's Comment:

Dr. Amano said that he was with the Forestry and Forest Products Research Institute of the Japanese Government.

Dr. Amano said that he had been looking forward to receiving indications to solve various problems like uncertainty, permanence, and leakage at this Forum. Dr. Amano said that the first day's session was very useful for him as all the presentations were really to these points.

Dr. Amano said further that Dr. Mark Stevens' presentation on IGP programme was useful by showing ways of capacity building and technology transfer from Annex 1 countries to Non Annex 1 countries.

<u>Second Part of the Panel Discussion: Panelists' comments on the prospects</u> and tasks of forestry sector in each country.

The chairperson, Dr. Kobayashi, expressed his gratitude to the panelists for their comments and expressed his pleasure of hearing various valuable comments. Dr. Kobayashi now asked the panelists to offer their comments on the prospects and tasks of forestry sector in each country. Dr. Kobayashi said those panelists who thought that they had offered comments of same effect in their comments at the First Part could skip their comments for this sub-theme.

Dr. Kobayashi asked Sr. Claudio Forner to offer his comments first.

Sr. Claudio Forner's Comment:

Sr. Forner commented that he undersood global economy had been changing from materials production to providing service, adding that forestry sector would be in the same situation.

Sr. Forner said that Colombia had various problems like poverty and drugs and said that the Government of Colombia, fully recognizing these problems, thought that forestry would provide a chance to change the national situation into the better way, although currently the forestry sector accounts for only less than 1% of GDP. Mr. Forner said that he himself also was convinced that the potential of forestry is large and forestry was the sector which would develop from now on.

Sr. Forner said that the Colombian Government regarded re-afforestation as a tool to terminate illegal logging and cultivation of illegal plants.

Sr. Forner reported that social awareness of the service from forest as important ecosystem was rising, those who owned forest land had started reforestation and the country had been receiving international cooperation to forestry sector past 10 years especially in watershed conservation. Sr. Forner expressed his hope that projects beneficial both to donors and to Colombia could be further developed by CDM.

Sr. Forner, in concluding his comment, said the Ministerio del Ambiente had been tackling CDM for the past 3 years but so far there was no operating project and said that the risk of investment was diminishing and hoped Japan's private sector's interest in investment in Colombian forestry sector.

Dr. Ir. Ngaloken Gintings' Comment:

Dr_o Gintings said that a project, cooperated by Norway, had started three years ago to measure the biomass of cinamomum, and started the same for Acacia mangium.

Dr. Gintings said that a project cooperated Π CA had started recently and it would do the similar measurement for pines, Shorea, Dipterocarpus, and Acacia mangium and hoped the better information on carbon sink function for these

species would be got, although there were about 4.000 tree species in Indonesia.

Dr. San Win's Comment:

Dr. San Win said that one thing that he would like to emphasize was that forestry sector played a very important role in Myanmar; for instance forest products export accounted for 1/3 of the total export in amount, had number 1 export item surpassing rice export which had been dominant from 1940s to around 1985. He said that forest had to be well managed for environmental reason as well as economical reason.

The matter of concern, said Dr. San Win, was the excessive shifting cultivation practice in the country; he said 22.8% of the national land, or 150,000 km2 in absolute terms were affected by shifting cultivation which meant annually 10,000 ha were under shifting cultivation, supposing the fallow period as 15 years. Dr. San Win said that 5 million people, or 1 million households were engaging in shifting cultivation and as the national population was 50 million, 10 % of the people in the country were doing shifting cultivation.

Dr. San Win made concluding remarks that the potentially available land for planting was very large and in one estimate as large as 300,000 km2.

Dr. Pham Quang Minh:

Dr. Minh focused on the importance of biodiversity factor in promoting the National 5 Million Reforestation Programme, citing the fact that during the Programme 327 from 1993 to 1998 650,000 ha were planted and 700,000 ha were rehabilitated through natural regeneration.

Dr. Minh said natural regeneration was very effective in conserving biodiversity, adding that good combination of natural regeneration and planting was essential.

Dr. Minh showed following slides:

- A rehabilitated forest by natural regeneration, especially at upper part of a hill, mixed with tea and crop growing in the lower part.
- A forest of indigenous species; these indigenous species were growing mixed with 7 year old eucalyptus plantation.
- Farmers, utilizing and conserving a forest through coppicing in Paksan Province, grow cassava and litchi at the mountain foot.
- Another example of natural regeneration with farming at the foot of a hill.

- Farmers coexisting with a forest; planting species to be decided by them and natural regeneration introduced in the upper part of a hill.
- A Center to research natural regeneration and cheaper way of forest rehabilitation; research on bamboo also conducted here.
- A farmer rehabilitated a forest in 35 years by leaving behind one mother tree. This farmer told Dr. Minh that he wanted to leave this forest to his family, to his seven sons.

Mr. Pravit Chittachumunonk's Comment:

Mr. Pravit said that in Thailand forests were categorized into three categories: conservation forests, economic forests, and the forests to be converted to farm land. Mr. Pravit said if re-afforestation was intended to establish consevation forests, it would clearly lead to carbon sink.

Mr. Pravit said that the Forest Rehabilitation Project on the Occasion of the 50th Anniversary of the King's Ascention to the Throne aimed at rehabilitate 5 million Rai, or 800,000 ha of degraded land, all for conservation purpose.

Mr. Pravit said reforestation was done mainly for economic forests.

Mr. Pravit said that ,like Colombia , forestry in Thailand accounted for less than 1% of GDP and one of the difficulty for RFD was to secure funds for the forest rehabilitation effort.

Mr. Pravit said that under the circumstance the Thai Government had started the economic tree planting project, which was afforestation on degraded farmlands to make them private forests, with the Government support to participaticipating farmers through providing seedlings and funds for labor. This project had to be scaled down, according to Mr. Pravit, due to the economic crisis a few years before. Mr. Pravit expressed his concern in case re-afforestation would be included in CDM whether the established forests would have to be maintained as forest for long term or what would happen when the forest would eventually be harvested. Mr. Pravit said that he understood no clear answer existed on these questions and thought these points would be the subject of keen discussion.

Dr. Mark Stevens' Comment:

Dr. Mark Stevens said there were currently 1 million ha of commercial plantation in Australia and the plan was to increase the area to 3 million ha in 2010.

Dr. Stevens said that the Government were giving incentives for this.

Another matter Dr. Stevens raised was 10 to 15 million ha of farm land degraded by

salt effect.. Dr. Stevens said that Australia should tackle with this problem for the next 20 years through large scale vegetation recovery activity.

Dr. Stevens said that he was not a specialist in this field but he had dared to explain why the salt related damage, accumulation of salt on land occurred.

Dr. Stevens said that the danger had not been recognized when the tree cover was removed to make the land into farm land.

He said that there had been a great inland lake in Australia, which eventually had been dried up, accumulated salt in soil. When the vegetation cover of this died up land was removed, Dr. Stevens added, the underground water level rose and resolved the salt. Dr. Stevens said that the salted soil problem had not been a classical case salt related problem associated with irrigation in dry climate but very unique phenomenon.

Dr. Amano's Comment:

Dr. Amano said that he would comment on Japan's stance on CDM rather than talk on the tasks/problems of Japanese forests and forestry.

Dr. Amano said that there had been a concern that there existed uncertainty of getting data and difficulty to grasp the exact situation on leakage in forestry sector in relation to CDM.

Dr. Amano said that this problem had been thought as particular to forestry sector; however, Dr. Amano added that the recent understanding emerging, after hearing the situation of emission source, was there would be not much difference between the source and the sink in the field of measurement and data collection.

The general understanding now, said Dr. Amano, that if the problem would be solved in the source, most probably that would lead to solving the problem in the sink like forestry, as well.

Dr. Amano said that he could get some supporting facts by hearing the first day session of this Forum. One promising fact Dr. Amano introduced was the attempt by field projects to seek a parameter in calculating carbon volume based on forest biomass, and another attempt applicable was to calculate forest biomass based on forest inventory.

Dr. Amano said that in case Japanese firms and NGOs/ NPOs tried to tackle with the task of setting the base line or assess the leakage, they would be able to get quite a lot of information/data from past case studies.

Mr. Amano, in conclusion, said that he had been impressed by the presentations

which emphasized the participation by local communities and people in re-afforestation projects to be successful and he understood this in a way was proposal for projects with no leakage and if we would continue to take this stance, the leakage problem would be solved.

Third Part of the Panel Discussion: Panelists' comments on the inclusion of LULUCF in CDM

The Chairperson, Dr. Kobayashi, asked the panelists to comment on the inclusion of LULUCF in CDM.

Sr. Claudio Forner's Comment:

Sr. Claudio Forner said that Colombia supported LULUCF to be included in CDM and had been participating in international discussions with that standpoint.

He said that LULUCF was an important factor in global carbon cycle and how well its sink role be accommodated in CDM in order to achieve the objective of UNFCCC was very important task; but he added that LULUCF's inclusion in CDM should be regarded as a transitional way to cope with the global warming as Colombia's belief was that the ultimate measure was to reduce GHGs emissions and to sift the energy source to renewable ones.

Sr. Forner further said that there were three tasks for LULUCF to be included in CDM:

- Firstly political consensus has to be achieved internationally and at the national level the decision on desirable activities which provide for the way the projects are operated.
- Secondly, although they are not insurmountable, such problems as development of accounting method and identifying appropriate baselines have to be solved.
- Thirdly, each country has to set up system to promote CDM and has to identify the way to approve appropriate projects.
- Fourthly, promoting international cooperation in every aspect is essential.

Dr. Amano's Comment and Question to Sr. Forner:

Dr. Amano said that one of the hindrances for inclusion of LULUCF in CDM was that if forest conservation projects should be applicable as the USA asserting, the carbon credits acquired would be enormous in amount and would be cheap in costs, making the ideal of the Kyoto Protocol meaningless. (Dr. Amano added that carbon credits got from re-afforestation would be smaller in amount and costlier to acquire.)

Dr. Amano said about the community involvement in re-afforestation projects that it would be difficult to expand unless the additional benefits from CDM would be awarded.. He said the permanence problem would be partly solved if additional economic benefits would be got from CDM as they would provide incentive to keep forests longer terms.

Under the above thinking, Dr. Amano's question to Sr. Forner was about the category of LULUCF to be included in CDM and how high the credit level for LULUCF should be.

Sr. Claudio Forner's response to Dr. Amano's question:

Sr. Forner said that he put importance on the fact that environmental regulations should not aggravate the local economy and that the Kyoto Protocol should not aggravate the Global economy.

He said that the important matter was to reach the target through economical way. He agreed with Dr. Amano by saying that the USA would be able to meet nearly all her obligation if forest conservation projects became applicable to CDM. (Sr. Forner said that he was talking in relation to the Article 3 and 4 of the Kyoto Protocol, which was different from CDM.)

Sr. Forner said currently the majority of GHGs emitted in developing countries were the ones from degradation and decrease of their forests and if we could turn around the situation, it would serve enormously for mitigating global warming.

Sr. Forner reiterated if the LULUCF based activities could result in the decrease of GHGs, why not do that.

Sr. Forner said that the viable activities would be forest conservation, re-afforestation, and agroforestry as they serve for achieving sustainable development as well as mitigating global warming.

Dr. Amano's additional comments:

Dr. Amano raised question to either participant from Myanmar or from Vietnam. He said that he heard the participants from these countries earlier commented that local communities and local people's participation were essential for the success of re-afforestation projects and he said that he would like to hear what kind of benefits for the local communities/people were expected and what kind of policy they were taking for that.

Dr. Kyaw Tint's respose (Dr. Kyaw Tint was in the floor for the second day):

Dr Kyaw Tint said that in Myanmar community forestry had been in practice since 1995 when the Community Forest Instruction was issued. He explained that the Instruction had permitted communities to use forest land for 30 years for tree planting and cash crop cultivation, with possibility of further extension if the land was managed well.

Dr. Kyaw Tint added that the Government had been promoting participatory forestry, from planning to utilization.

Sr. Claudio Forner's response:

Sr. Forner introduced the host generated projects which the Colombian Government was promoting and through which communities implement their projects on their own lands.

He said that there had been difficulty in promoting community projects as they thought the government were selling forests to other countries but eventually they came to understand that the government were doing good thing for the country.

Sr. Forner explained that there were other projects of different kind and for these projects contracts with communities offer basis to shre the profits.

Dr. Mark Stevens' comment:

Dr. Mark Stevens said that he had been hearing very valuable comments on sustainable development and community participation. He said that these matters were more important for host countries and another matter of importance was what was truly voluntary mechanism.

Dr. Stevens said that he would like to come back to the question of whether COP would be able to get decision. He said there were two types of opposing voices: one was technical and another was political opposition.

Dr. Stevens said that he was convinced that we would be able to solve technical problems but at the same time he would presume that reaching consensus would be difficult before the second part of COP6; he said it would be good that COP6 PartII

would decide to include LULUCF in CDM with the condition that the technical problems would be solved later; This scenario, according to Dr.Stevens, was similar one with the Pronk Note issued just prior to the end of the part I of COP6. Dr. Stevens said that political opposition was based mainly on the concern that large scale sink projects would form the major component of Annex I countrie's actions to cope with global warming.

Dr. Stevens said that if the technical problems were solved and the costs of monitoring sink projects were taken into account, the costs of reducing GHGs by sink projects would be the same level with low-cost energy projects and he was convinced that sink projects would not be the major component of emissions reduction. Dr. Stevens said, therefore, political opposition would be eventually solved.

Dr. Gintings' comment:

Dr. Gintings commented on three topics:

- Firstly, Dr. Gintings said that at the high political level clear image was lacking; Newspapers still reported about CDM, and sometimes those who had invested in re-afforestation projects thought that CDM would bring monetary return and asked us where the money was. Dr. Gintings said that this was a problem.
- Secondly, Dr. Gintings said that setting baselines for each tree species and for each region would be needed and measurement of biomass at the time of planting and thereafter pediorically was necessary but should be done in economical way.
- Thirdly, Dr. Gintings said that in his country people often said that their major concern was not the global environment but their living condition and this sometimes resulting in cutting of trees in even protected forests. Dr. Gintings said that it would be important to let the people know the mechanism and merit of CDM sink projects.

Dr. Amano's additional comment:

Dr. Amano said CDM related to the Article 12 of the Kyoto Protocol but Japanese private sector had been investing in Australia besides in Non Annex I countries. Dr. Amano asked Dr. Stevens what would be the difference of credits got in Annex I countries and those got in Non-Annex I countries; Dr. Amano's second question was whether carbon sink activities under the Item 3 and 4 of the Article 3 of the Kyoto Protocol could be treated in the same way with those under the Article 12.

Dr. Mark Stevens' response to Dr. Amano:

Dr. Stevens said that he was not sure whether he could talk on the matters related to the Items 3 and 4 of the Article 3 and said that he preferred to comment in more general terms on cooperation among countries.

Dr. Stevens said that the Joint Implementation(JI) of the Article 6 of the Kyoto

Protocol and the International Emission Trading of the Article 17 were the mechanisms concern only Annex I countries; Although details of these mechanisms had not been finalized yet but clearly they related to sink activities and would be affected by the decision on the Item 3 and 4 of the Article 3.

Dr. Stevens said also the decisions on the Article 6 and 12 would have to be carefully followed up.

Dr. Amano's follow-up question to Dr. Stevens:

Dr. Amano asked Dr. Stevens' comment on difference of generation of credits and of accounting system for each mechanism.

Dr. Mark Stevens' response to Dr. Amano's follow-up question:

Dr. Stevens said there was clear difference between JI of the Article 6 and CDM of the Article 12. \Box

Dr. Stevens said further that there were difference between matters related to the Article 6 & 17 and the matters related to domestic activities of the Article 3, especially in terms of additionality.

Dr. Stevens mentioned that if the International Emission Trade of the Article 17 was tied up to domestic emission trade regime and became interchangeable, the problem would become simpler.

8 Floor's Responses to Panelists

The Chairperson, Dr. Kobayashi, opened the discussion to the floor.

Dr. Baba's comment and question to Dr. Mark Stevens:

Dr. Baba said that he was from the International Society for Mangrove Ecosystems(ISME).

Dr. Baba said that he had understood from Dr. Mark Stevens' comment that there had been two types of problems which should have been solved at COP6 in the Hague; one was technical problem and the other political problem.

Dr. Baba said that he understood that Dr. Stevens had commented that the technical problems would be solved through prior negations before the second part of COP6.

Dr, Baba said that he thought the political problem would be more difficult to solve and would like to hear from Dr. Stevens on the possible clue to the political solution.

Dr. Mark Stevens' response to Dr. Baba:

Dr. Stevens firstly clarified what he had commented earlier by saying that he had not said the technical problems would be easy to solve but he had said that if the enough time was devoted, the solution would be found.

Dr. Stevens said further that he thought there would be linkage between political problems and technical problems and by utilizing this linkage the political problems would also be solved.

Mr. Urata's comment and question:

Mr. Urata said that he belonged to the International Charcoal Cooperative Association (ICCA) and currently his group were conducting cooperation in the Philippines in the field of charcoal making.

Mr. Urata raised the problem of forest fire and illegal cutting which would annul several years' effort of tree planting.

Mr. Urata wondered what would happen to CDM credit in case the planted forest burnt down.

Sr. Claudio Forner's response to Mr. Urata:

Sr. Forner said the risk management should be treated as first priority.

He said that every project had risks and the risk management would be essential.

Sr. Forner said after the risk management, precaution measures had to be taken; Insurance should be applied to cover the lost CERs and the buffer should be set up; He said there were two types of buffers: One was a buffer set in the CER account and another was physical buffer to set aside, for instance, half of the forest so that even in case of forest fires or insect/disease damage some carbon stock would remains. Sr. Forner said that he believed that projects would be profitable even after every precaution was taken.

In conclusion Sr. Forner commented that in Colombia community operated projects were being promoted and in such a case the will to protect forest would be stronger and the case of illegal cutting would be decreased.

Dr. San Win's comment on illegal cutting:

Dr. San Win said that the extension activity at the grass root level was essential as unlike in developed countries awareness raising campaign through mass media was not possible.

Dr. San Win said also the welfare of local communities should come as first priority in re-afforestation projects, which would result in reduced illegal cutting.

Dr. Gintings' comment on illegal cutting:

Dr. Gintings supported the idea that local communities should be given more responsibility in order to prevent illegal cutting.

Dr. Gintings introduced one good example in West kalimantan; there one community manage a community forest of 100 ha and they had their own rule to manage forest and even in case of shifting cultivation was practiced, all the members would be notified and every community member observe the rule to protect the forest. Dr. Gintings said in Indonesia the amount of fines for forest fire was 5 billion rupiah, which amount one man could not earn in his life; Dr. Gintings said that in such a case no one would observe the rule; Dr. Gintings reemphasized the importance of community rule to protect forest.

Dr. Baba's comment on illegal cutting:

Dr. Baba of ISME commented again that there would be two kinds of illegal cutting: one type was poverty induced one and another type related to making profits. Dr. Baba said the two types should be dealt with separately. Dr. Baba concluded by saying that extension would be essential but at the same time it would also be essential that CER credit would be given to communities as well.

Dr. Gintings' associated comment:

Dr. Gintings said there had been no experience in which way CER would go to community.

Dr. Gintings said that if communities got CER credit, forests would be managed in better way.

Dr. Fatoni's comment:

Dr. Fatoni said that he was living in Tokyo and was a forestry attaché at the Indonesian embassy in Tokyo.

Dr. fatoni said he had participated in COP6 in the Hague and had experienced the heated discussions on whether CDM should include sink projects or not; EU was opposing it and the Umbrella Group including USA was supporting it. Dr. fatoni said that he personally felt that the core of the opposing views lied in the economic consideration.

Dr. Fatoni introduced one experience in Lampung, South Sumatera, where more than 100,000 m3 of Acacia trees were growing but they could not sell the wood as there were no buyers; the people there even made contact with Dr. Fatoni to seek buyers in Japan.

Dr. Fatoni said in case of CDM sink projects too, we should think of what kind of benefits would be provided to people.

Dr. Fatoni raised a question to Japanese participant(s) in case 10 year duration planting CDM project existed and in case people could sell the wood to industry and got money, whether local communities/people also could gain money from CDM credit.

Mr. Yasuhisa Tanaka's comment:

Mr.Tanaka said that he was working for the Ministry of Agriculture, Forestry and Fisheries, and was currently dealing with matters related to COP.

Mr. Tanaka said that he would like to comment in relation particularly Dr. Baba's comment/question and Dr. Gintings' response, the subject of which was whether CER belonged to communities or not.

Mr. Tanaka said, to be precise, that this kind of question could not happen.

Mr. Tanaka explained that in the Kyoto Protocol only 39 countries listed in Annex B had the GHGs reduction obligation and Non-Annex B countries had no obligation in GHGs reduction; he further explained CDM, Clean Development Mechanism of the Article 12 of Kyoto Protocol provided Annex B countries with the opportunity to acquire CER, Certified Emission Reduction, which these countries would utilize to accomplish their obligations, through implementing projects in Non-Annex B countries.

Mr. Tanaka said that CER, therefore, belonged in principle, to Annex B countries. Mr. Tanaka added that it was a fact, notwithstanding the above, in the negotiations of COP there had been arguments on whether only Annex B countries got all CER acquired by CDM and whether Non Annex B countries would be able to get certain portion of CER; there had been still another argument that if non Annex B countries got some CER, that might lead to reduction obligation of non Annex B countries.

- Mr. Tanaka explained that Non Annex B countries' benefited in acquiring CER would use it in Emission Trading of the Article 17 of the Protocol and so far there had been no discussion on whether CER also belong to communities or not.
- Mr. Tanaka reiterated that CDM had been intended to be a tool of Annex B countries to accomplish their reduction target through implementing projects in non Annex B countries and Non Annex B coutries would benefit by technical and financial assistance associated with the project to achieve sustainable development.
- Mr. Tanaka further explained that there had been idea of flowing back of a share of proceeds of CER to some developing countries to be used for their sustainable development but the matter was still in discussion stage.

Mr. Tanaka also touched upon the Adaptation Fund, which the Pronk Paper at around the end of the COP6 in the Hague mentioned. The idea of the Adaptation Fund, said Mr. Tanaka, was to utilize a part of proceeds of CDM and to use it for desertification prevention, watershed management, and etc. in developing countries, but the discussions about it had just started.

Mr. Mikihiro Inoue's additional comment to Mr. Tanaka's comment:

Mr. Inoue said that as far as the Kyoto Protocol provided, CDM should benefit both developed as well as developing countries.

Mr. Inoue said that there was another argument that projects in developing countries, funded by developing countries should be approved as CDM projects; Japan

supported this idea but there were some countries opposing and nothing had been decided yet.

Mr. Inoue concluded his comment by saying that there was general consensus in COP that CDM should not issue credit too easily; credit or in other words CER should be approved after examined carefully.

Mr. Sasaki's comment and question:

Mr. Sasaki said that he was working at the Environment Division of Tokyo Electric Power Company.

Mr. Sasaki said that the company had started a large scale afforestation project, aiming at carbon sink, in Australia in February, 2000.

Mr. Sasaki said that Tokyo Electric Power Company understood that afforestation would be valuable not only for carbon sink but also played important roles in contributing indirectly to conservation of natural forests and to enhance wood based local economy, through growing woody biomass. Mr. Sasaki said that his company, therefore, would further promote this kind of afforestation project. He said that the company had no experience in forestry and when such a company did implement re-afforestation projects there were various problems, which included illegal cutting and forest fires which had been already discussed and

institutional problems like uncertainty related the status of sink projects in CDM and lack of information ,and so called country risk of host countries.

Mr. Sasaki said that already several countries had invited the company to invest in re-afforestation projects but so far the company had decided to have a project in Australia as the New South Wales State Law there had provided for a carbon right and besides there was high possibility of *J* of the Kyoto Protocol.

Mr. Sasaki asked whether there were any other countries which would offer such support as providing information and reliable partners.

Sr. Claudio Forner's response to Mr. Sasaki:

Sr. Forner said that the points raised Mr. Sasaki were very pertinent ones.

He said that in general terms host coutries should arrange appropriate institutions like setting up a central government organization specialized in bridging investors and local communities. Sr. Forner said that in case of Colombia the CDM office was established in the Miniterio del Ambiente, which promote investment by linking investors and local communities, and covered investors' risks.

Mr. Nakagiri's comment:

Mr. Nakagiri from the Greening Center of Yamanashi Prefecture Government, said that in case planted forests were preserved long term like protected forests and in case there were no forest fires or illegal cutting, the stock of carbon would last long time while in case the wood would be used as fuelwood, construction material, and pulpwood, the carbon stock would be transitional.

Mr. Nakagiri said that in that regard except fossil fuel substitution by wood energy , carbon sink by forests seemed transitional.

Mr. Nakagiri said that he thought Sr. Forner's presentation on setting limited term on effectiveness of carbon sink for re-afforestation projects was reasonably understandable.

Mr. Nakagiri said he would like to receive further comments from other panelists.

Dr. Amano's response to Mr.Nakagiri:

Dr. Amano said that the matter related to so called ' accounting' of sink.

He said there had been several proposals; firstly to treat carbon sink by forest as zero; secondly to treat the average forest inventory as the carbon fixed by forests. The second proposal was popular at the earlier stage but there were such difficulties as when should be the start of awarding credit; at the beginning planting or after certain period and etc.

Dr. Amano said that the third proposal was the ton-year-carbon accounting method, which proposed to give carbon sink credit little by little yearly, maximized at the average inventory of the forest.

The latest proposal, according to Dr. Amano, was the proposal explained at this Forum by Sr. Claudio Forner, and which proposed the fixed term for carbon sink by forest.

Dr. Amano said that most of these proposals were attempts to give carbon sink credit to re-afforestation which would eventually would be harvested.

Whether COP would decide to include re-afforestation in CDM was still under negotiation, Dr. Amano said, and if which accounting method would be adopted was uncertain, too.

<u>Mr. Hisashi Watanabe's comment</u>:

Mr. Watanabe said that he was from the Japan Federation of Paper Manufacturing Industry.

Mr. Watanabe reported that Japanese paper industry had been established about

250,000 ha of plantation through 25 projects in 10 countries to secure raw material supply. Mr. Watanabe said these plantations had been established mainly over bare lands, which meant large amount of carbon had been fixed.

Mr. Watanabe said that he was convinced that Japanese paper industry had been contributing much to mitigate global warming.

Mr. Watanabe one thing that he would like to emphasize was that there was JI in the Kyoto Mechanism besides CDM and for JI sink project had been included in the Protocol itself. He said that therefore re-afforestation could be included in JI. Mr. Watanabe expressed his concern that if CDM excluded sink projects, Japanese paper industry's investment would be concentrated in Annex I countries and very biased situation would occur, depleting Japanese paper industry's possible contribution in improving environment and economy of non-Annex I countries. Mr. Watanabe , in concluding, said that for CDM it was not feasible to decide only among Annex I countries but the voices of non-Annex I countries were essential.

Sr. Claudio Forner's response to Mr. Watanabe:

Sr. Claudio Forner said that Mr. Watanabe had expressed very important points of the situation.

With regard to non-Annex I countries' position, Sr. Forner said that even now there were quite a number of countries which supported CDM's inclusion of sink.

He said that he himself supported sink's inclusion in CDM because besides the reason that Mr. Watanabe had pointed out, non-Annex I countries would lose the benefits to facilitate sustainable development in the country. He added that it was true through such kind of projects of energy projects, there would be benefits too of course, but the benefits from forestry sector projects would flow into communities and people directly.

Sr. Forner, in conclusion, said that Colombia was making efforts to solve the technical problems not only for the sink's inclusion in CDM but also to achieve the ideal of the Kyoto Protocol of the United Nations Framework Convention on Climate Change.

Mr. Juan Pablo Campos' comment:

Mr. Juan Pablo Campos said that he lived in Tokyo and was consul at the Colombian Embassy in Japan.

Mr. Campos said that he had been encouraged by the earlier comment by Mr. Sasaki of Tokyo Electric Power Company.

Mr. Campos also said that the comment of Mr. Watanabe of the Japan Federation of Paper Industry was wonderful.

He said that the Colombian Embassy in Japan had been making efforts to provide various information including the one on security to Japanese private sector as Colombia was far from Japan but needed investment. He said the Colombian Embassy would assist Japanese private sector through diplomatic channel too if they wished to invest in Colombia..

Mr. Francis Otigil's comment:

Mr. Francis Otigil said that he was from Malaysia, was working at Sabah Forestyry Development Authority(SAFODA), and was currently visiting Japan. Mr. Francis Otigil said that he was not representing Government and would like to present comment on personal basis.

Mr. Francis said that he was not opposing to sink projects to be included in CDM. He said that he hoped that thorough discussions should be done from the standpoint of the developed countries which wished to do sink projects and get credits and from the host countries viewpoint which receive investment.

He added CDM sink projects would not be justified in contributing to emissions reduction but should be sustainable and economically feasible.

Mr. Francis Otigil said that the mechanism should not be unbalanced one and we had to make it 'Win-Win' situation.

The Chairperson, Dr. Kobayashi thanked the panelists and the floor and closed the Panel Discussion.

10 The Chairperson's Closing Remarks by Dr. Fujio Kobayashi Dr. Kobayashi delivered the following closing remarks:

I have tried to direct the 2 day Forum in a way that discussions would be vigorous and every partipant could express their views freely. To my satisfaction, the Forum has been very successful on that score and I should like to express my sincere gratitude to all the participants for their cooperation.

My concluding remarks consist of the following 9 items and are different in nature from adopted conclusions of official meetings due to the nature of this Forum; they are rather my personal observations/conclusions.

I, however, hope these would serve the basis for further actions by the Forum organizer, JIFPRO and the participants.

1. The two day forum consisted of the key-note speech, presentations, and panel discussions, and has provided us with diversified and useful information and view points.

The participation by the floor was very active too and I suppose that the Forum was very useful to the general participants, too.

I should like to express again my sincere gratitude to all the participants for the success of the Forum.

- 2. I am much impressed by the efforts being carried out by each country to achieve sustainable forest management through rehabilitation and conservation activities.
- The sub- theme of the Forum refers to COP of the United Nations Framework Convention on Climate Change, which aims to reduce GHGs emission.
 I feel that generally speaking too much expectation has been given to carbon sink role of forests.
- 4. Forests are precious ecosystems with biological diversity.

It is essential that we manage forests sustainably so that the resources and environment, indispensable for the survival of humanbeings, would be preserved.

At the same time, it is clear that forests are effective GHGs sink.

Under the circumstance of deterioration and reduction of world forests, LUL UCF, including re-afforestation projects to be included in CDM, would be very important in giving incentive to these activities.

5. I believe the ideal of CDM, i.e., to facilitate sustainable development of developing countries and to assist developed countries to fulfil GHGs reduction

obligation, should be always firmly kept in mind.

6. Throughout the Forum, need of international cooperation to promote sustainable forest management in developing countries has been repeatedly emphasized.

Importance of enhancement of Japan's private sector's overseas re-afforestation cooperation, the Forum's theme, has been recognized fully through the Forum. It has been recognized fully that it is important, while at the same time the Government to Government cooperation is no doubt important.

7. During the Forum such technical problems related to LULUCF in CDM as matters related to baseline, leakage, and permanence were discussed. Besides, matters related to land tenure, community/people participation, forest fires and illegal cutting were pointed out as matters to be dealt with; several examples of ways to deal with these problems were introduced.

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- 8. Even in case the decision to include LULUCF in CDM is taken, the efforts to pursue a more feasible methodology should be continued. This would give more incentive for investment in more scientifically sound projects. This should be continued up until the First Target Period of the Kyoto Protocol. During the Forum, some useful proposals for this were introduced.
- 9. I hope the organizer of the Forum, JIFPRO completes and distributes the proceedings of the Forum as soon as possible.
 I hope also JIFPRO would try their best to hold another Forum of this kind, as I think this Forum has provided an important opportunity to enhance Japan's private sector's re-afforestation cooperation with special emphasis put on the role of CDM, participated in by important partners of foreign countries.

Thank you very much.

The Forum was closed by the above closing remarks by Dr. Fujio Kobayashi, Chairperson.
Annex: List of Foreign Participants

- Dr. Untung Iskandar, Director General, Forestry Research and Development Agency, Ministry of Forestry, Indonesia
- Dr. Kyaw Tint, Director General, Forest Department, Ministry of Forestry, Myanmar
- Dr. Nguyen Ngoc Binh, Director General, Department for Forestry Development, Ministry of Agriculture and Rural Development, Vietnam
- Dr. Plodprasop Suraswadi, Director General, Royal Forest Department, Thailand
- Dr. Mark Stevens, Assistant Manager, Internationalo Greenhouse Partnerships
 - Office, Department of Industry, Science and Resources, Australia
- Sr. Claudio Forner, Advisor, Ministerio del Ambiente, Colombia
- Dr. Ir. Ngaloken Gintings, Director, Forest Products Research Center, Indonesia
- Dr. San Win, Forest Research Institute, Forest Department, Myanmar
- Dr. Pham Quang Minh, Head of Silviculture Division, Department for Forestry Development, Ministry of Agriculture and Rural Development, Vietnam
- Mr. Pravit Chittachumnonk, Director of Silviculture Research Division, Royal Forest Department, Thailand
- Dr. Achara Wongsanchan, Secretary to the Director General, Royal Forest Department, Thailand
- Dr. Tachrir Fatoni, Head of Forestry Division/Forestry Attache, Embassy of Indonesia to Japan
- Mr. Francis G. Otigil, Deputy General Manager, Sabah Forestry Development Authority, Sabah, Malaysia
- Mr. Juan Pablo Campos, Consul, Embassy of Colombia to Japan

The number of Japanese participants was some 180; they include NGO members, forest related industry personnel, academics, students, and government officials.

