
FROM STOCKHOLM TO RIO DE JANEIRO : A REVIEW OF GLOBAL FOREST POLICY ON COMBATING DEFORESTATION AND ENHANCING REFORESTATION

PRATIWI and N. LUST
Laboratory of Forestry - University of Ghent

ABSTRACT

This paper gives an overview of the awareness and global policies on deforestation and reforestation, with attention to biodiversity and sustainable forest management. As forests have important functions for the human environment, forest disturbance directly impacts the human and environmental conditions. Awareness of these conditions result in many initiatives and programmes dealing with combating deforestation and enhancing reforestation.

These programmes have been highlighted by international organizations and institutions a longtime before the Earth Summit in Rio de Janeiro 1992. Implementation of these global programmes need multilateral cooperation between international institutions on the one hand and between national governments, NGO's, local people, and forestry sector on the other hand.

Preparations of the implementation of those programmes have been started both at international and national levels.

Key words : Stockholm, Rio de Janeiro, forest policy, the Jakarta Declaration, the Tropical Forestry Action Plan, Langkawi Declaration, Rio Declaration, UNCED, Agenda 21, Conference of the Parties, Helsinki Process, Montreal Process, deforestation, reforestation, biodiversity, sustainable forest management, criteria, indicator.

1. Introduction

Forest is one of the most important elements of human environment, with various functions and relationships to other factors such as soil and land, flora and fauna, water and energy cycles, climate, cultures, etc. Therefore disturbance directly impacts the human and environmental conditions.

Development is designated to increase human welfare, which includes human activities to exploit and to change environmental conditions. Since the early 1970's there is an increase of awareness that human activities leading to pollution, ozone depletion, non-renewable resource depletion, species extinction, deforestation, land degradation cannot be indefinitely sustained, because they might destroy the environmental conditions, where humanity depends

upon. Consequently it suggests man to change his development strategy, because we consider it to be our moral duty not to jeopardize the survival and flourishing of non human life.

It is realized that some impacts of human activities are linked to deforestation due to land-use changes and/or over-exploitation of forest products. This problem has been considered as a concern of many international experts and institutions, leading to determination for combating deforestation and enhancing reforestation.

Objective of this article is to study global forest policies which are related to combating deforestation and enhancing reforestation, and their relationships with other development sectors, especially in the tropical regions.

2. AWARENESS AND POLICIES ON DEFORESTATION AND REFORESTATION

Considering that environment is very important to the continuity of human life, several efforts towards solving the environmental problems have been initiated. "*The Stockholm Conference*" of 1972 was one of the initiatives which stressed the environmental problem not only as a national problem, but also as an international problem. The conference wanted to produce an inter-governmental response to environmental needs.

Related to the world's emerging crisis, this conference set up the United Nations Environment Programme (UNEP). UNEP has played an important role in its brief life-span in building environmental awareness and encouraging environmental stewardship. It has stressed fundamental principles in economic development. Development and environmental preservation are compatible and essential. Without development, poverty as the main cause of environmental degradation in the developing world cannot be eliminated. But development will fail unless it is built on firm ecological foundations. UNEP stimulates a sustainable development without eroding the natural resources on which it depends. Therefore it has a forestry section to implementing its programmes.

Since it is realized that deforestation causes some serious negative impacts (Bormann et al., 1974; Daniel and Kulsingham, 1974; Myers, 1974), awareness of some International Organizations (such as International Union of Forest Research Organization (IUFRO), International Union for Conservation of Nature and Natural Resources (IUCN), International Society of Tropical Forester (ISTF), World Bank, etc.) in combating deforestation and enhancing reforestation increases. Researches and actions are carried out for forest conservation and reforestation, especially of tropical forests.

Following this initiation, many ideas appear, particularly in the tropical forestry sector. In 1976 the International Union for Conservation of Nature and Natural Resources in collaboration with UNEP, FAO and WWF produced a publication entitled "*Ecological Guidelines For Development In Tropical Rain Forest*". This was a response to the concern that failure to pay adequate attention to fundamental ecological principles was resulting in a form of development of these areas which was unsustainable and was depleting a vitally important natural resource (Poore and Sayer, 1987).

On the Eighth World Forestry Congress, with as theme "Forest for People", held in Jakarta, 1978, "*The Jakarta Declaration*" was issued. According to Mauria (1979), the substances of this declaration are based on true forestry competence and knowledge and adapted to forestry practices. It contains a number of recommendations regarding policy measures as well as technical and socio-economic issues in the development process of forestry, forest industries and rural development.

The main points of the Jakarta Declaration are :

1. greater effort to use forests as a means of increasing food production by more direct production of food from forests;
2. the need to recognize people as the motive force of development and not as passive object;
3. to draw the attention of Governments to the important new role which forests may be asked to play as a source of synthetic organic materials which are now produced from fossil fuels;
4. forest services should assume a leading role in evaluating proposal for the establishment of all forest industries;
5. while mechanization of some activities may be desirable, forests have an important role in providing employment. This indicates that the labor intensive role of forestry should be preserved in appropriate circumstances;
6. the urgent need for a more highly trained work force; the need to promote the health, safety, status and remuneration of forest workers; the need to analyze and review the costs and benefits of safety and to develop better means for their assessment;
7. employment opportunities should be equal as between men and woman, from forest worker upwards. Steps should be taken to increase the proportion of woman employed;
8. foresters have a responsibility to give a positive lead in environmental and land-use aspects of forests;
9. in using forest for recreation and tourism the economic needs of people living in or near forests must always be considered; and
10. if present trends continue and potential demands materialize, there is the prospect of a serious gap between needs for industrial wood and the supply capacity. This gap can only be avoided if the shrinkage of the forest is halted; if natural forests are properly managed; if harvesting and utilization is more complete; if large areas of successful plantation are created and intensively managed.

These 10 points mainly deal with forest exploitation for the people's welfare. Forest conservation and combating deforestation sound only softly in points 8,9 and 10.

Following the Jakarta Declaration, during the "Third Meeting of the Association of the Southeast Asian Nations (ASEAN)" ministers of Agriculture and Forestry declared on 12th August 1981, in Jakarta, the "*Jakarta Consensus*". This consensus spelled out in detail ASEAN common forestry policies, technical cooperation, establishment of regional forestry institutions, cooperation in intra-ASEAN timber trade, and common stand on international issues in forestry, particularly related to conservation, reforestation and sustainable forest management (Anonymous, 1990).

In October 1985, "*The Tropical Forestry Action Plan*" (TFAP) was released at the time of the World Forestry Congress in Mexico, with a view towards the harmonizing and strengthening of the much needed cooperation in the tropical forestry.

TFAP anticipated to the several benefits, including:

1. more jobs, income, and stimulus to rural development, as well as increased flows to products and services from sustainably managed forests;
2. improved food security, agricultural productivity, and land-use;
3. more dependable sources of fuelwood;
4. increased exports of forest products, with locally added more value;
5. increased local community involvement in local forest management; and
6. increased protection of wilderness, wildlife, and the genetic diversity.

The priority areas of the TFAP, are:

1. Forestry in Land-Use

Activities aim at the interface of forestry and agriculture and at more rational land-use through community forestry, integrated watershed management and desertification control, and land assessments and forest resource inventories. To include planting of multipurpose trees on farms, to help combat the declining soil fertility and shortages of poles, fuelwood and other forest products.

2. Forest-based industrial development

Activities aim at promoting appropriate forest-based industries by intensifying resource management and development, promoting appropriate raw material harvesting, establishing and managing appropriate forest industries, reducing waste, and developing the marketing of forest industry products. Beside, promoting forest-based industrial development income generates activities in rural areas as well as industrial plantations and the expansion of forest products exports.

3. Fuelwood and energy

Activities aim at restoring a balance between fuelwood supply and demand, by increasing production and reducing demand of fuelwoods; they also include programmes to develop wood-based energy systems for rural and industrial development.

4. Conservation of tropical forest ecosystem

Activities aim at conserving, managing, and using forests' genetic resources, including protected areas management and the management of forest for sustainable production.

5. Institution building

Activities aim at removing the institutional constraints to conserving tropical forests and using them wisely by supporting training, research, extension, greater institutional support to NGO's and the business community; the strengthening of public forestry agencies; and the revision of laws and policies to better integrate forestry into rational planning.

Although Winterbottom (1990) views that the five theme areas of TFAP may not address all of the major causes of tropical deforestation, progress in each of these areas is crucial to success in controlling deforestation and in promoting the sustainable development of tropical forests. This is due to the fact that many factors contribute to deforestation, either directly or indirectly. Furthermore Winterbottom (1990) argues that the implementation of TFAP into national development plans in most countries is incomplete. Most national plans, mainly based on forestry sector reviews, simply justify increased investment in the forestry sector, a focus too narrow to adequately assess the root causes of deforestation, much less to affect them significantly. Many plans only mention data about deforestation and reforestation rates, and the sustainability of traditional agricultural practices rather than correcting or questioning them. Some critical topics as land tenure, concentration of land holdings, the value of traditional uses of the forest and the extent of community management, and the relationship between agricultural practices and deforestation have not been adequately reviewed in many national TFAPs. Therefore it is very urgent to reform the TFAP. Re-direction and re-dedication to the plan's basic principles and goals are needed, including a deeper commitment to broad participation in the TFAP process and to the expanded role of local communities living in the tropical forests in the management and conservation of these forests. More systematic monitoring of the implementation of the TFAP is also needed, in order to ensure that the TFAP leads the way in the sustainable development of tropical forest lands.

The World Commission for Environment and Development (WCED) (1987) repeatedly stresses that tropical forests are very important for conservation of biodiversity and ecological processes. However, conservation without considering development is not a wise approach, because development need nature resource as a basic element. On the other side, government policy related to development often drives to over-exploitation of this resource, such as over-exploitation of wood without ecological awareness.

Government policy on any sector, either agriculture, energy, industry, etc. significantly impacts tropical forest resource. Conversion of forest to other land-uses, takes a variety of forms and seldom involves only one actor or decision maker. Such Poore and Sayer (1987) mention that the effect of all of these sectors greatly influence national economic, financial and social policies. Therefore the existence of tropical forests is not only determined by national forestry policy alone, but also by other sectors. The policy from all sectors will cause environmental problems, if there is no coordination as well as cooperation between all sectors. Environmental problems in fact are human ecological problems. They appear due to the environmental change, so that the environment becomes less compatible or even incompatible to support human life.

FAO is one of the international organizations which gives strong attention to deforestation problems. One of the FAO objectives is to give advice, assistance and operational help in the expansion of forest tree plantations for environmental protection and as renewable sources of energy, timber, fibers, fodder and food, giving special emphasis to drought resistant tree species that can directly support rural development, while also providing fuelwood; continuation of programmes of quality forest seed collection and distribution; and forest genetic resources conservation and use (Kalkkinen, 1984).

In 1978, the World Bank published a "*Forest Sector Policy*" which outlined a change in its forestry programmes with special reference to the role of forest in rural development and environmental, particularly watershed protection. Therefore about 65 percent of the external funding in 1980's are designated for forestry, and the emphasis of this funding is to extent the rural and environmental forestry investment, including fuelwood planting account for more than 60 percent of that investment.

The World Bank (1991) suggests some strategies to check deforestation:

1. poverty alleviation and population policy;
2. forest zoning and regulation;
3. areas under concession have to be managed sustainably;
4. correcting private incentives;
5. customary land rights need to be formalized and respected; and
6. public investments.

Reduction of poverty and population growth are assumed to reduce deforestation. Therefore policy related to stimulate productivity in densely populated areas is needed to increase people's prosperity.

In order to perform forest zoning and its regulation, especially where some forest areas are proposed to be protection areas, a realistic assessment is necessary. It means that appropriate natural resource surveys in the forested areas and determination of areas with special value for ecological diversity, etc. have to be taken into account. Enforcement of zoning and other regulations is likely to be ineffective unless private incentives are also changed. Incentives can be taken from Forest Concession Holders.

In the concession areas, regulations have to be applied by strict policy, and the concession holder has to follow and manage these areas in a sustainable way. Some degraded areas have to be reforested, because these areas may have become the source of livelihood for some communities.

To protect both forest dwellers and resources against agricultural encroachment or excessive exploitation by outside interest, customary rights of forest dwellers need to be formalized and respected.

Public investments, especially those which relate to infrastructure projects (i.e. roads and reservoirs), have to be carefully controlled, in order to avoid more access to the forests.

The issues of conservation, reforestation, sustainable forest management and biodiversity also became part of the main issues in the "*Langkawi Declaration*" on

"Environment" which was adopted by The Commonwealth Head of Government Meeting, held in Langkawi island, Malaysia, in 1989 (Anonymous, 1990).

On the Earth Summit, held in 1992, the "*Rio Declaration*" was issued. This declaration initiates statements of principles for the integration of environment and development. Concerns to the forestry sector are included in "*Chapter 11 of Agenda 21*", especially dealing with combating deforestation and enhancing reforestation. Agenda 21 provides a kind of action in all areas relating to sustainable development of the planet from now until the twenty first century. Implicit in Agenda 21 is the need for a change in the economic activities of all humans, a change based on a new understanding of the impact of human behavior on the environment. This Chapter 11 was released as the increase of awareness that forests as well as their biodiversity provide a wide range of socio-economic and environmental benefits and values. The importance of forests, both from ecological and economic point of view, determines a kind of policy either nationally or internationally, in which forest has to be used sustainably.

Chapter 11, Agenda 21, 'Combating Deforestation' covers four programme areas:

1. Sustaining the multiple roles and functions of all types of forests, forest land and woodlands. The basis for action is perceived to be the major weakness in the policies, methods and mechanisms adopted to support and develop the multiple ecological, economic, social and cultural roles of trees, forests and forest lands. The need to secure the multiple roles of forests and forest lands through institutional strengthening, including forest policy, research, training, education and extension, is recognized.
2. Enhancing the protection, sustainable management and conservation of all forests, and the greening of degraded areas, through forest rehabilitation, afforestation, reforestation and other rehabilitative means. The basis for action of this programme is stressed to be the threats of forests worldwide, arising from a wide range of human pressures and from mismanagement. Evaluation of resources management is needed as basis for action.
3. Promoting efficient utilization and assessment to recover the full valuation of the goods and services provided by forests, forest lands and woodlands. The basis for action of this programme is the failure to realize the vast potential of all forests and forest lands as a major resource for development. All aspects of sustainable utilization are included in the programme areas, and it is stated that the survival of forests and their continued contribution to human welfare depends to a great extent on succeeding in this endeavor, i.e. increasing people's perception of the value of forests and of the benefits they provide.
4. Establishing and/or strengthening capacities for the planning, assessment and systematic observation of forests and related programmes, projects and activities, including commercial trade and processes. The basis for action of this programme is to realize assessment and systematic observations as essential components of long term planning, for evaluating effects and for rectifying inadequacies. All of these mechanisms are often neglected in forest resources management, conservation and development.

After the Earth Summit, the issues, awareness and attention concerning the forest have continued nationally as well as internationally. Topics related to forest resources, such as biodiversity, climate change and desertification have emerged.

Actions to combat deforestation and enhance reforestation are frequent. Most of the actions are to encourage the sustainable forest management. Examples are:

1. Convention on International Trade in Endangered Species (CITES). Attempts to include some important tropical timber species on the list of endangered species;
2. International Tropical Timber Agreement (ITTA). Attempts to manage tropical forest sustainably. Many initiatives are underway to develop certification of forest products destined for International markets;
3. the International Tropical Timber Organization (ITTO) was established in 1985 with some objectives, one of them is to encourage members to support and to develop industrial tropical timber reforestation and forest management activities (Anonymous, 1987). In 1993, this organization issued the "ITTO Guidelines For The Establishment And Sustainable Management Of Planted Tropical Forest" (ITTO, 1993);
4. the India-United Kingdom initiative towards sustainable forestry, preparing for Commission on Sustainable Development in 1995;
5. the Malaysia-Canada initiative, in October 1994. Seven priorities of forest policy issues have been analyzed and a set of approaches and options for action were proposed;
6. the Center for International Forestry Research (CIFOR) - Indonesia dialogue has proposed a priority research agenda.

The most important points of the above mentioned initiatives, are:

1. the international dialogue on forests is very active and progress on a number of forest - related issues has been made. Cooperation between developed and developing countries should be increased;
2. forest - related issues should be formalized as agenda and suggest a high level of political interest in the topic;
3. there is a need to bring together the best available data and knowledge to develop a clear understanding of forest problems in the context of a wide range of socio-economic, ecological and political conditions and to propose innovatory approaches to the many complex forest-related issues. The current and future situations have to be analyzed. The role of experts and of governmental, intergovernmental and non-governmental organizations is very significant.

With the conditions of the deforestation rate and some initiatives to combat it, it can be stated that deforestation often accompanies the economic development. Therefore if deforestation will be slowed, it will result some sacrifices in short term economic growth. However if alternative uses of forest land are managed sustainably, environmental as well as social goals are expected to be achieved.

As known that deforestation causes many negative impacts, the most crucial impact is the decrease of biodiversity values. Therefore since Rio Conference, constitution as well as improvement of biodiversity values became an important international issue, beside sustainable forest management.

3. ATTENTION TO BIODIVERSITY

Tropical forests are rich in plant and animal species and also microorganisms. They interact with one another and with the physical environment of the ecosystem which forms the foundation of sustainable development. Biotic resources from this wealth of life support human livelihood and aspirations and make it possible to adapt to changing needs and environments (Raven, 1992).

Further Raven (1992) points out that to meet specific management or policy goals, it is often important to examine not only composition diversity of genes, species and ecosystem, but also diversity in ecosystem structure and function.

The role of biodiversity is very important. The variety of distinctive species and habitats influence the productivity and services provided by ecosystems. As the variety of species in an ecosystem changes, the ecosystem's ability to absorb pollution, maintain soil fertility and micro-climates, clean water, and provide other invaluable services changes too (Raven, 1992). Some reduction in biodiversity is an inevitable consequence of human development, as species rich forests and wetlands have been converted to relatively species poor farmlands and plantations. This cause impoverished systems that are less productive, economically as well as biologically. Therefore sustainable way to live is essential if biological diversity is to be conserved. For this reason, the balance between conservation strategies and its uses are necessary. However, government policies sometimes create over-exploitation of species, conversion of valuable natural habitats and over simplification of agricultural ecosystems. Enhanced food security, economic development, and improvement of medical care are all based on biological productivity and the diversity of genes and species (Juma, 1992). Therefore government policies have to be far from encouragement resource degradation and the conversion of forest ecosystem to other less valuable uses.

Deforestation is blamed as a cause of biodiversity loss. However, agricultural plantations too can sometimes be considered as an agent of deforestation, if it is done on marginal agricultural lands, where former residents are obliged to move into natural forest areas, or where natural forest stands are converted into plantations. Therefore Juma (1992) suggests that sound timber plantation policy must avoid three particular traps:

1. no policy should promote the conversion of diverse natural forests to plantations. This means that plantations should be placed on already deforested and unproductive lands;
2. no policy should condone or support the displacement of rural communities through the privatization of their *de facto* common lands. This is because many lands categorized legally as "degraded public land" are, in fact, much more valuable in their present form to rural communities than if they were converted into a commercial plantation;

3. no policy should promote the establishment of uninterrupted monocultural stands over large areas. Although such stands are cheap to establish and easy to harvest, they are also vulnerable to diseases, market fluctuations, and changes in technology.

Accordingly, plantation should be employed only within a patchwork of land-use that includes native tree species and wildlife tree species and that provide products, livelihoods, and living space to local communities.

Concern over habitat loss at global level has led to a number of political, policy and technical initiatives aimed at conserving biodiversity and managing natural resources more sustainably. Some of these initiatives have been non governmental and others have been intergovernmental. For instance "*Caring for the Earth*" and "*The Global Biodiversity Strategy*" (WRI et al., 1992) are two non-governmental initiatives mainly concerning with policy issues, while the diversity programme of the International Union of Biological Sciences (IUBS) deals with natural science (Boyle and Sayer, 1995). The most influential initiatives have been the WECD (the Brundland Commission) and the UN Commission on Biodiversity. The WECD, which has created under the authority of the UN "General Assembly" met between 1984 and 1987, and its report "*Our Common Future*" (WECD, 1987) served to popularize concern over loss of natural resources and need for sustainable management. It also led to the call for international convention to deal with conservation of species. This call was answered by the United Nations, when its environment programme initiated the process which led to the formulation of a broader convention, dealing with biodiversity rather than just species.

One of the principle outcomes of the UNCED, the Earth Summit held in Rio de Janeiro in 1992, is the convention of Biological Diversity. In this convention the biological diversity is defined as the variability among living organisms from all sources, including, inter alia, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part of the ecosystems. This includes diversity within species, between species and of ecosystems. This document recognizes the ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values of biological diversity and its component.

However, Boyle and Sayer (1995) say that there are two problems with these types of definition, i.e.:

1. biodiversity can also be considered in other terms, for example in terms of structural diversity, functional diversity, or trophic diversity. These alternate formulations maybe more useful for some applications;
2. the definition is conceptual in nature, and therefore not easily amenable to measurement and monitoring.

They conclude that the measuring of biodiversity components is not easy, even in simple ecosystems.

The objectives of this convention are (Article 1): the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.

The principle methods of achieving these objectives call on countries, as far as possible and as appropriate to identify components of biological diversity important for their conservation and sustainable use, to use, to monitor these component and to identify activities which are likely to have significant adverse effects on such conservation and sustainable use (Article 7).

This convention has an important implication for forest management, not only related to conservation purposes, but also to the availability, development and use of biological resources (Grayson, 1995). Up to now, there have been 133 countries which signed the Convention of Biological Diversity (Kompas Daily, November, 17th, 1995).

In conjunction with that convention, some, international conferences and seminars have been carried out in order to disseminate that convention. The countries, having ratified that convention, have carried out the "*Conference of the Parties (COP) I*" in Bahamas on 1994, and the "*COP II*" has being held in Jakarta, on 6th till 7th November 1995.

Some issues developed on the COP II are related to conservation; sustainable use; access, transfer and development of technologies; and financial mechanism of biodiversity conservation and use (Hidayat, 1995). In addition, topics on "Intellectual Property Right, Threat to Biodiversity and Society", and "Bio-safety" are strongly debated (Kompas Daily, November, 7th, 1995).

4. SUSTAINABLE FOREST MANAGEMENT

Since UNCED, 1992, concern of sustainable forest management, which is related to the convention of biodiversity, has been decided to increase the use of forest resources including to combat deforestation. It is clearly stated in Chapter 11 of Agenda 21 that sustainable forest management should be enhanced. Related to this chapter attempts to include some important tropical timber species under the CITES were unsuccessful. The newly renegotiated ITTA incorporates an accord on the need to sustainably manage tropical forest (Grayson, 1995). Recently, sustainability has come into prominence within the World Bank both in connection with Tropical Forestry Action Plan (TFAP) and with the Environmental Assessment (EA) processes, particularly in case of some of the "Forest/Environment and Natural Resources Management Projects" that have a component involving sustainable exploitation of tropical forest (Botkin and Talbot, 1992).

The decision of UNCED includes non legally binding authoritative statement of principles for a global consensus on the management, conservation and sustainable development of all types of forests. There are 15 principles in this statement, among others:

1. forest resources and forest lands should be sustainably managed to meet the social, economic, ecological, cultural and spiritual human needs of present and future generations;
2. government should promote and provide opportunities for the participation of interest parties, including local communities and indigenous people, industries, labour, non-governmental organizations and individuals, forest dwellers and women in development, implementation and planning of national forest policies;
3. national policies and programmes should take into account the relationship, where it exists, between the conservation, management and sustainable development of forests and all aspects related to production consumption, recycling and/or final disposal of forest products;
4. the role of planted and permanent agriculture crops as sustainable and environmentally sound sources of renewable energy and industrial raw material should be recognized, enhanced and promoted;
5. efforts should be undertaken towards the greening of the world. All countries, notably developed countries, should take positive and transparent action towards reforestation, afforestation and forest conservation as appropriate;
6. efforts to maintain and increase forest cover and forest productivity should be undertaken in ecologically, economically, socially sound way through the rehabilitation, reforestation and re-establishment of trees and forest on unproductive, degraded and deforested lands, as well as through the management of existing forest resources;
7. national policies and/or legislation aimed at management, conservation and sustainable development of forest should include the protection of ecologically viable representative or unique examples of forests, including primary/old growth forests, cultural, spiritual, historical, religious and other unique and valuable forests of national importance.

All those principles consider that forest issues and opportunities should be examined in a holistic and balanced manner within the overall context of environment and development. It should take into consideration the multiple functions and types of forests, embody complex and unique ecological processes which are the basis for their present and potential capacity to provide resources to satisfy human needs as well as environmental values. Their sound management and conservation, including value to local communities and to the environment as a whole, should be a concern of the Governments of the countries to which they belong.

Related to those principles of sustainable forest management, many initiatives are underway to develop guidelines of sustainable forest management, as prerequisite of certification of forest product destined for international market, particularly in the Organization for Economic Cooperation and Development (OECD) countries (Grayson, 1995).

ITTO has produced guidelines relating on sustainable management of forests:

1. for the conservation of biological diversity in tropical production forests;
2. for the establishment and sustainable management of planted tropical forests; and
3. for the sustainable management of natural tropical forests.

Formulation of scientifically based criteria and indicators (C & I) for sustainable forest management has emerged as a priority issue in the Boreal and Temperate forests, notably "Helsinki Process" and "Montreal Process" on C & I.

Related to C & I of the sustainable forest management, the ITTO has carried out several meetings to formulate the working definition of sustainability of tropical forest management, leading to formulation of C & I both at national and forest management unit levels (Coto and Tarumingkeng, 1995).

5. DISCUSSION

Deforestation is one of the most important environmental issues in regional and international scales. There are some negative impacts which are linked with environmental issues such as land degradation, decreasing forest resources, loss of biodiversity, climate change, etc. Therefore attention of international and regional organizations to deforestation increases, especially in combating deforestation, enhancing reforestation and decreasing the negative impacts of deforestation including efforts to practice sustainable forest management.

Programme areas that are included in the Chapter 11 of Agenda 21 are:

1. sustaining the multiple roles and functions of all types of forests, forest lands and woodlands;
2. enhancing the protection, sustainable management and conservation of all forest and the greening of degraded areas, through forest rehabilitation, afforestation, reforestation and other rehabilitation means;
3. promoting efficient utilization and assessment to recover the full valuation of the goods and services provided by forests, forest lands and woodlands; and
4. establishing and/or strengthening capacities for planning, assessment and systematic observation of forests and related programmes, projects and activities, including commercial trade and processes.

In fact, these programmes are in line with the previous declaration, and consensus issued by international and regional institution and conferences.

By these programmes, there is an appeal to all countries to formulate and to implement national forestry programmes or plans, using international action frameworks, such as TFAP that concerned with enhancing protection and sustainable management of all forests. Consequently the forest policy of the national government should be harmonized with the global forest policy. To do so these global programmes need to be disseminated through international seminars and conferences.

Implementation of these global programme need and multilateral cooperation between international institutions on the one hand and national governments, NGO's, local people, and forestry sector on the other hand.

The cooperation between international and national institutions should deal with:

1. creation, maintenance and updating of a forest data base, including transfer technologies for forest inventories, monitoring and management, especially designated to suit their purposes and conditions;
2. researches in order to have suitable recommendations for the detailed national forest policy, as well as forestry planning both at national and management unit levels;
3. researches, discussion and recommendations to develop forest resources in harmony with environment, including programmes on watershed management and sustainable forest management;
4. building up institutions to implement national policies and planning as well as financial supports;
5. marketing forestry products (wood and non-wood), improvement quality of products, and provision of information on changes in international forest product market;
6. interrelationship between sustainable forest management with development of rural people and their environment, etc.

The programmes stated on the Chapter 11 Agenda 21, have been responded by some international institutions (such as World Bank, FAO, ITTO, etc.) as well as national governments, which produced some initiatives to form intergovernmental working groups, such as:

1. The India - United Kingdom (UK) Initiative towards sustainable forestry. Both countries arranged the Workshop in order to help overcome the North-South split which had characterized international forestry discussion in recent years. A principle aim of the initiative was to pave the way for a successful review of forestry by the commission of sustainable development.
2. The Malaysia - Canada initiative is an Intergovernmental Working Group on forests created by the government of Malaysia and Canada. This working group hold meetings to set or suggest options, approaches and opportunities to specific forestry topics. Particular attention is given to management, conservation, sustainable development and enhancement of all types of forests; to set up criteria and indicators of these activities, to discuss about trade, approaches to mobilizing additional financial resources and environmentally sound technologies, institutional linkages, participation and transparency in forest management, and comprehensive cross sectoral integration.

3. The ITTO, the FSC and other international institutions also have launched initiatives for implementation of the programmes initiated in Agenda 21.

The same responds of international institutions and national governments to implement the programme of the conservation of biodiversity followed. Regular meetings of intergovernmental working groups as well as initiatives of international institutions have been carried out to formulate technical, financial and institutional aspects of the implementation of the programmes.

Actions of the implementation of these programmes are expressed by the implementation of the national forestry programmes, such as, in Indonesia, implementation of sustainable forest management, reforestation, establishment of Indonesian Ecolabelling Institution, determination of criteria and indicators for sustainable forest management at national and forest management units.

6. CONCLUSIONS

Programmes dealing with combating deforestation and enhancing reforestation have been highlighted by international organizations and institutions a longtime before the Earth Summit in Rio de Janeiro 1992. Hence the programmes on Chapter 11 Agenda 21 on combating deforestation are in line with previous declarations and consensus of international and regional institutions and organizations.

Implementation of these global programmes need and multilateral cooperation between international institutions on the one hand and national governments, NGO's, local people, and forestry sector on the other hand.

Intergovernmental and multilateral cooperation should deal with improvement of forest data base; transfer technologies; researches, discussion, and recommendation on development of forest resources in harmony with environment; building up institutions; marketing forest products and development of the rural people and their environment.

Preparations of the implementation of those programmes have been started both at international and national levels.

7. REFERENCES

Anonymous (1987). International forestry organization. IUSF Newsletter, No. 26, 3-8.

Anonymous (1990). Management of Asean forests for sustainable development. The Asean Ministerial mission for sustainable forestry development to European Community. Brussels, 21 p.

Bormann, F.H., Likens, G.E., Siccama, T.G., Pierce, R.S. & Eaton, J.S. (1974). The export of nutrients and recovery of stable conditions following deforestation at Hubbard Brook. *Ecol. Monogr.*, 44 : 255-277.

- Botkin, D.B. & Talbot, L.M. (1992). Biological Diversity and Forest. In: Sharma, N.P. (ed.). *Managing the World Forest's*. Iowa, Kendall/Hunt Pub. Co. : 47-74.
- Boyle, T.J.B. & Sayer, J.A. (1995). Measuring, monitoring and conserving biodiversity in managed tropical forests. *Commonwealth Forestry Review*, Vol. 74 (1), 1995 : 20-25.
- Coto, Z. & Tarumingkeng, R. (1995). Enhancing sustainable forest management in Indonesia: ITTO Year 2000 objectives. Jakarta, Indonesian Forestry Community, 7 p.
- Daniel, J.G., & Kulasingham, A. (1974). *Malayan Forester* 37, 152.
- Grayson, A.J. (1995). The World's forests: International Initiatives since Rio. Commonwealth Forestry Association, 72 p.
- Hidayat (1995). Titik Temu Keaneka-an Hayati Utara - Selatan, *Kompas*, November, 12th, 1995.
- ITTO. (1990). ITTO Guidelines for the sustainable management of natural forests. Yokohama, ITTO Technical Series No. 5.
- ITTO. (1993). ITTO Guidelines for the establishment and sustainable management of planned tropical forests. Yokohama, ITTO, 38 p.
- Juma, C. (1992). Establishing a National Policy Framework for biodiversity conservation. In: WRI., IUCN. & UNEP. (1992). *Global biodiversity strategy. A guidelines for action to save, study and use Earth's biotic wealth sustainably and equitably*. Food and Agriculture Organization of the United Nations, UNESCO, 37-54.
- Kalkkinen, E. (1984). International Organizations and Conferences. In: Hummel, F.C. (ed.). *Forest policy: A contribution to resource development*. The Hague, Martinus Nyhoff/Dr.W. Junk. Pub., 259-281.
- Kompas Daily (1995). Agenda Pertemuan COP II Diwarnai Kepentingan Utara. Edition November, 7th, 1995.
- Mauria, H. (1979). IUSF and The World Forestry Congress. *IUSF News Letter*, 10 : 2-5.
- Myers, N. (1974). Indonesian forests and land-use planning. A report on fact-finding tour aimed towards a coordinated development of forest resources in
Indonesia. Lexington, Kentucky, Thomas Hunt Morgan School of Biological Sciences, University of Kentucky, 109 p.
- Olembo, R.J. (ed.). (1983). Environmental Guidelines for the formulation of National Soil Policies. UNEP. Environmental Management Guidelines 7. Nairobi. UNEP, 32 p.

Poore, D. & Sayer, J. (1987). The management of tropical forest lands: ecological guidelines. Gland, Switzerland & Cambridge, United Kingdom, International Union for Conservation of Nature and Natural Resources, 67 p.

Raven, P. (1992). The nature and value of biodiversity. In: WRI, IUCN, UNEP. (1992). Global biodiversity strategy. A guidelines for action to save, study and use Earth's biotic wealth sustainably and equitably. Food and Agriculture Organization of the United Nations, UNESCO, 1-6.

UNCED. (1992). Agenda 21. Chapter 11. Combating deforestation. Rio de Janeiro.

WCED. (1987). Our Common Future. Oxford, Oxford university Press.

Winterbottom, R. (1990). Taking Stock: The Tropical Forestry Action Plan after five years. Washington D.C., World resources Institute, 59 p.

World Bank (1991). Forest Policy paper. Agriculture and Rural Development Department Policy, Research and External Affairs. Washington D.C., The World Bank, 79 p.

WRI., IUCN. & UNEP. (1992). Global biodiversity strategy. Guidelines for Action to Save, Study, and Use Earth's Biotic Wealth Sustainable and Equitably. United States, United Nations Education, Scientific and Cultural Organization (UNESCO), Food and Agriculture Organization of the United Nations, 244 p.

