COMMISSION OF THE EUROPEAN COMMUNITIES

COM (89) 410 final

Brussels, 2 August 1989

THE CONSERVATION OF TROPICAL FOREST:

THE ROLE OF THE COMMUNITY

(Communication of the Commission)

Com 410/

CONTENTS

THE CONSERVATION OF TROPICAL FORESTS : THE ROLE OF THE COMMUNITY

I. INTRODUCTION

1. Gravity of the Situation

Tropical forest destruction has increased in recent years to such an extent that what has long been regarded as a serious problem is now a world-scale crisis. The rising tide of public and political concern is based on several factors:

- tropical forest destruction, especially through burning, is contributing to manmade carbon-dioxide emissions. Today, fossil fuel use injects about 5 billion tons of carbon into the atmosphere each year and deforestation adds at least one billion tons more (or around 20%). As a result, carbon dioxide concentrations are continuing to increase at about 0.4% a year, contributing - together with other gases such as methane and chlorofluorocarbons (CFC's) - to the 'greenhouse effect': the trapping of the sun's heat near the earth's surface.

- tropical forests play a significant role in global atmospheric mechanisms in other ways. Forests of all kinds exchange moisture and energy with the atmosphere more intensively than do other types of land-cover. Tropical forests with their dense vegetation are especially important and their destruction may have a significant impact on climate, globally or regionally. The process of evapo-transpiration in the Amazon basin, for example, and the subsequent transport of water-vapour via the troposphere results in the transfer of heat from tropical to temperate regions.

- tropical rain-forests are the world's greatest reservoir of genetic resources. They cover seven per cent of the earth's surface, but they contain 50% of its species. The Rio Negro, a tributary of the Amazon, alone contains 700 fish species, more than four and a half times as many as the combined rivers of Europe. But threats to biodiversity are growing alarmingly. The great single threat is the outright destruction of habitats, particularly of tropical forest, where biodiversity is spectacularly high. Loss of species diversity at a minimum estimated rate of three extinctions per day (and perhaps as many as fifty per day) and of genetic diversity within species is reducing the range of genetic material available for future use in medecine, agriculture and other vital fields.

- at national level, the loss of the tropical forest may represent a gross misuse of vital natural resources, accelerating the process of environmental degradation and making the objectives of 'sustainable development' still harder to attain.

The present crisis involves all types of tropical forest, from the 'closed' lowland rain forest typical of the Amazon and Congo basins and

the South East Asian archipelago, to moist *montane* (hill) forest, dry savanna forest (often encroached by desertification), monsoon forest, and the largely coniferous forest of higher mountain regions, notably the Andes and the Hindu Kush - Himalaya. It is most acute, however, in lowland rainforests. These contain not only the great majority of indigenous forest-dwelling people, and the greatest variety of plant and animal species, whose properties may be of incalculable value to modern industrial as well as traditional and developing societies, but also the most valuable timber.

The most important causes of tropical forest destruction are extreme poverty and over-population. Their impact is accentuated by patterns of land control and ownership which multiply the phenomenon of landlessness and hence acute land hunger. Two more immediate pressures producing this crisis link developing countries to developed via demand for hardwood timber, or cheap beef.

By the 1980s, approximately half of all tropical forests that existed at the beginning of this century had been destroyed and the land converted to other uses. According to the only formal world-wide survey of deforestation, conducted by FAO in 1981 (revised 1984), the rate of loss of tropical forest was about 11 million hectares per year (an area approximately three times the size of Belgium).

This rate of tropical forest loss has been accelerating sharply each year in recent years. The Brazilian Space Research Institute, for example, has claimed that Brazil alone lost over 25m ha of rain forest and savanna forest in 1988. (Instituto De Pesquises Espacias, 1989). At present rates of forest loss, all but a few of the remotest forest regions, mostly in the Amazon and Congo basins, could have disappeared by the early 21st century (2010 - 2025).

2. The Need for Rapid Action

The deforestation crisis is complex and not susceptible to simplified solutions. Action must be taken simultaneously on many fronts. Hence the need for a co-ordinated strategy both on the part of the Community and the Member States, and, most importantly, in the wider international framework.

The Community is directly and indirectly affected by the tropical forest crisis. It is affected directly by the contribution of deforestation to the greenhouse effect, and by the loss of genetic material which may be critical in solving present and future problems, and by threats to timber supplies. It is affected indirectly by the potential collapse of development efforts locally and regionally due to environmental disruption, with attendant threats to food supplies and hence political stability.

The cultural, political, economic, social and agro-forestry diversity of the states containing tropical forests requires that the Community and international conservation strategy be similarly diversified. In particular, the elaboration of this strategy should take account of the policies of the producer countries.

The implementation of the Community strategy for the conservation of tropical forests will have to be the result of a dialogue between the Community and the countries or regions concerned, and will be a function of the relations which the Community has with these countries in the economic and commercial fields as well as in the area of development cooperation.

The Community strategy should by itself be able to ensure that the Community makes an important contribution towards the solution of the present problems. It should at the same time have an international dimension. Indeed it is essential that the other major "players", for example the United States, EFTA and Japan and also the centrally-planned economies, participate in concerted actions with, at the same time, the full cooperation of the main countries within whose borders the remaining tropical forests are to be found.

3. The Wider Context.

The Resolution on the Greenhouse Effect and the Community, adopted by the Council on 8 June 1989, underlined the global dimension of the "Greenhouse Effect" and the need for the Community and the Member States to play their full part in the definition and implementation of a global response to the problem. Measures to conserve tropical forests are of importance for the maintenance of global climatic stability. Even more important, as the same Council Resolution stressed, will be the measures introduced in the advanced industrialized nations, including those of the European Community, to increase energy savings; to improve energy efficiency; to promote the development and use of energy sources, such as non-fossil fuels which will not contribute to the "greenhouse effect" and to give high priority to the development and introduction in the Member States of innovative commercially viable technologies in these fields.

II DEFORESTATION : THE SITUATION IN PERSPECTIVE

1. The Current Situation

Deforestation has historically been primarily a temperate zone phenomenon - a fact that must be borne in mind in negotiations with Governments of tropical forest countries. However since the 1960s the bulk of the phenomenon has occurred in the tropics.

Official estimates as to the scale and scope of the phenomenon are few, and out of date. FAO's 1981 estimate (revised 1984) for the loss of tropical forest was around 11 million hectares a year (twenty football pitches a minute). On the basis of current knowledge, it is likely that the updated survey of tropical forest cover to be produced by FAO by 1991 will show a considerable acceleration in the rate of loss.

Two major problems beset attempts at estimates. First, satellite surveillance, which is an extremely important means for assessment of deforestation, the most favoured source of data, needs on-the-ground verification if a picture is to emerge that is accurate enough to indicate the policy implications of forest loss or disturbance (eg in relation to carbon emissions). Secondly, local participation and governmental co-operation is required to achieve such verification. This is often not available at present, due either to the political reticence or lack of technical and organisational capabilities.

Thus in 1982/3 an area of 3.7 million hectares, or over one third of the annual estimated world total of forest losses, was destroyed by fire in East Kalimantan [Indonesia], but the loss was not reflected in revised FAO estimates (1984).

It must be stressed that the tropical deforestation problem differs very considerably among the major tropical forest regions, as, indeed between individual countries. For example, Africa in general differs from the other major tropical regions in that its tropical closed forests represent only about half the area covered by open savannah forest. The proportion of closed to open forest in South America is 2.5 times, and in Asia (excluding Oceania and China) about 4 times. See Annex A.

2. The Perspective.

Looking towards the year 2000, it was estimated in 1986 (World Resources Report) that :

In Africa

Gabon will have lost over a third of its rainforest and Ghana, half. Madagascar's forests, on which a particularly concentrated rescue effort is centred, led by WWF and other conservation bodies but with government aid agency support, will be 99 per cent gone unless present trends are sharply

reversed. Only a few patches will remain in Sierra Leone and the Ivory Coast, while Nigeria is likely to have only vestiges left outside national parks.

The Congo Basin contains some 12 per cent of remaining rainforest, mostly in Zaire. Yet in Zaire, a country which is not generally reckoned to have made major incursions on its forest due to relatively low population levels and the presence of tse tse fly, vast tracts of forest have been destroyed through small scale farmers burning for grazing with scarcely a log extracted. Zaire continues to have major plans for forest clearance. Large-scale cattle ranching is envisaged across this, the second largest extant region of tropical moist forests to supply world demand for cheap beef, following in the footsteps of Central and South America.

In Asia

Bangladesh, mainland India and Sri Lanka have already lost all primary rainforest outside parks and reserves. In less than a decade - perhaps three or five years at current rates - only a few small patches of accessible lowland forest will remain in Malaysia, Thailand and the Philippines. Thailand has lost half its forest since 1960. In 1988 it banned all lowland logging under draconian penalties, following much loss of human life through flooding. But the action appears too late to prevent further ecological disasters. Indonesia's primary forests, at present exploitation rates, will be reduced to remote and inaccessible regions by the turn of the century.

In the Americas

Central American forest cover *as a whole* has been reduced from about 80 per cent in the early 1960's to under 40 per cent in the late 1980's. Guatemala, Colombia and Mexico will, by the year 2000, have lost over one third of what remains of their forests today; Honduras, Nicaragua and Ecuador more than half and Costa Rica 80 per cent. The situation in the Brazilian Amazon basin has already been referred to. The Amazonian forests of other countries sharing the basin are also under heavy pressure from forest colonization logging and mineral (especially oil) exploration.

* * *

Looking ahead a quarter of a century, at present rates of loss, only the Amazon and Congo basins will still have major forest areas left. Brazil's forest, which still makes up over 60 per cent of the Amazon region will have disappeared by the year 2000 at the estimated 1988 rate of loss of 5.1 per cent per annum. (Instituto De Pesquises Espacias 1989)

III CAUSES OF THE PHENOMENON

Tropical forest is an important natural resource for the countries concerned, which have a right to use this resource in a balanced and sustainable way to support their economic and social developments, while maintaining for long term global aims a part of it untouched (forest reserves). Forest destruction takes place when the use of this resource is not achieved in a sustainable way.

a. The underlying causes of deforestation are rooted in a complex web of social, economic, and institutional problems both within and outside the forestry sector. The relative importance of these factors varies from one region to another. They include :

- the combined effects of poverty, skewed land distribution, insecure land and tree tenure, low agricultural productivity, lack of access to credit and markets, and rising population pressure,

- the demand for tropical timber and agricultural products,

- international debt obligations, which can lead developing country governments to accelerate the pace of forest exploitation in order to earn needed foreign exchange.

b. There are four principal immediate causes of tropical forest destruction

- clearance for agricultural purposes.

- cutting/felling for fuelwood, wood and timber (timber is defined separately as mature wood used for durable products eg house building, ships, furniture etc).

- public development schemes.

- natural phenomena.

1. Deforestation for Agricultural Purposes

The destruction of tropical forest for agricultural purposes in recent years dwarfs all other causes of deforestation by comparison. "Blame" cannot be attached to the agricultural colonists who enter the forest. They are generally the poorest, landless or dispossessed elements of society, driven to slash and burn the forest through lack of any alternative strategy to provide the food and fuel for their survival.

Forest farmers follow trails blazed by loggers, road builders and site clearers. However, to an increasing extent forest colonisers today are equipped with chain-saws (especially in Central and South America) and clear forest land at their own initiative. When, as is generally the case due to weak and poor soils, their food crops dwindle after two to three plantings, they may sell their land for a few US$ per hectare to ranching land-owners who raise cattle for beef export, primarily to North America,

but also to Western Europe. Because of the poverty of the soils, however, such ranching even if extensive, often desertifies the land in three to five years. The ranchers then move forward purchasing more cleared forest land from colonisers, leaving desert behind them.

2. Fuelwood, Wood and Timber

According to the FAO Yearbook on forest products 1986, removals from tropical forest comprise 83 % for non-commercial use (mainly firewood), 13 % for local commercial use, and 4 % for commercial use as exported timber. Thus the export trade is not a major direct cause of forest destruction. *

However, offsetting the apparently small importance of exported timber is the fact that timber extracted for export tends to use larger equipment to penetrate inaccessible forest areas to extract large individual specimens of trees. Such equipment is of high environmental impact. As much as 55% of a hectare of standing dipterocarp forest of Borneo (Sarawak, Sabah, Kalimantan) may be effectively destroyed by heavy equipment extracting three to five trees. Experience from Malaysia suggests that cutting the lianas before felling can reduce the damage up to 20 %.

It is generally the case that the environmental impact of export logging is higher than that of logging for domestic purposes. Export logging, with its heavier equipment and deeper penetration in remote regions, is also more prone to encourage forest destruction by landless colonisers. Their slash-and-burn agricultural practices fan out from logging roads and sites.

Because the level of this damage varies from country to country, and forest to forest, it is impossible to offer meaningful percentages of responsibility in global terms for the direct and indirect impact of export logging. However, it is clearly substantially more than the 4% of extractive share.

An increasing part of the 83 % of non-industrial wood extraction is now entering the market as commercial firewood transported from the forest. Steadily increasing demand for such firewood is an important source of pressure on tropical forests.

---

* In 1984 the value of imports of timber and timber products into Western Europe and the United States both stood at US $ 2.2 billion and to Japan, US $ 2.3 billion. The main difference between these three blocks is not so much in terms of total trade value but rather the form in which tropical timber is imported. Japan imports raw material direct from forest zones, particularly South-East Asia. The United States imports mainly semi- or completely manufactured goods from intermediary countries such as Hong Kong and Singapore. Europe lies somewhere between these two extremes. (In volume terms the 1980 figures for the import of tropical timbers were U.S. $ 10 million m3, as compared to Japan's 35 million m3 and Europe's 21 million m3).

3. Public Development Schemes

Another major cause of forest destruction is official development schemes for forest land. This is generally of two types:

- road-building in deliberate attempts to open up "land without people for people without land" in schemes of transmigration. This is often accompanied by subsidies to individual farmers to induce them to settle in rain forest lands, or tax incentives to corporations to encourage the clearance of forest for cattle raising for export.

- major industrial projects whose purpose is to provide raw materials or energy supply for industrial processes elsewhere. The forest location of such schemes is mainly a consequence of the availablity of a resource - a river catchment for a dam, or an ore body for example. However, the low value placed on the existing land use (or non-use) in economic terms may be a major contributory factor.

4. Natural Phenomena

Increasingly in this decade, major deforestation has resulted from a combination of human intervention and mis-management with a natural phenomenon which would otherwise have damaged forest areas but not destroyed them. For example, Hurricane Joan in October 1988 blew down several million cubic metres of valuable specialist hardwood timber in South and Central Nicaragua. The government was negotiating to salvage the timber from the hurricane-damaged forest when a part of it was destroyed by fires set by forest farmers. The increasing frequency of hurricanes and climatic/weather disturbances, which may accompany the phenomenon of global warming, may, over the coming years, produce a growing convergence of natural phenomena with man-made damage, resulting in worsening forest destruction.

IV. CONSEQUENCES OF THE DEFORESATION PHENOMENON

These may be divided into:

- social and humanitarian
- economic/trade
- environmental

1. Social and Humanitarian

The most immediate and severe suffering caused by tropical deforestation is felt by the true forest dwellers, who have lived in and off tropical forests for many thousands of years, practising slash-and-burn agriculture without destroying the forest. (The fallow rotation of these practises may be as long as 60 - 80 years.) These indigenous forest dwellers who may number in total some 2.25 - 2.5 million, depending on definitions, possess knowledge of the properties of forest species which have proved, and could continue to be, valuable to industrial societies.

In many areas territorial rights of such forest people are challenged by their governments, and their treatment is the subject of international controversy. Forest peoples are not infrequently moved into reservations too restrictive for their extensive forest cultivation practices. Also the basic human rights of these people as well as the knowledge and experience which they have of living in harmony with their environment have sometimes been ignored.

The indigenous forest peoples' presence is challenged also by colonising forest farmers who seek to emulate their slash-and-burn agriculture but lack knowledge of, and respect for, the forest habitat. The numbers of these colonists also render impossible any notion of long fallows between periods of forest cultivation.

Also to be considered is the social and humanitarian situation of the forest colonisers themselves, who enter the forest people's domain. As the colonisers mis-use and destroy the forest they destroy the basis of their livelihood. While further forest remains they may hope to move on. However, when forest lands are cleared and become desertified (an estimated 40% of cleared Brazilian forest is now desert) the landless become forestless as well, facing the prospect of worsening hunger or even mass starvation paralleling the plight of the former dwellers of Sahelian savanna lands.

2. Economic/trade

The prospect of the loss of the forest resource base due to over-exploitation and forest clearance has very serious long-term economic implications for both the tropical forest countries themselves and their

trading partners, including the European Community. which imports 11 - 12 million m^3 of tropical timber annually.

Developing countries are already, as a whole, net importers of timber from the temperate zone. Timber dependence will, at present rates of forest removal, become acute by the late 1990s. The loss of timber value to tropical forest countries is likely to be increased significantly by the combination of bad forestry and timber processing practices and the impact of natural phenomena, such as droughts and hurricanes. The 1982/3 Kalimantan fires, mentioned on page 7, were estimated to have destroyed between US $5 - $7 billion value of standing tropical timber.

Loss of food production due to desertification also has major economic implications for deeply indebted countries, which are already often in food deficit.

In retrospect we may find that if the pace of deforestation in the tropics is not greatly slowed or halted, the disappearance of species other than trees may prove the greater economic loss. The estimated value of the trade (legal and illegal) in wildlife, mostly from tropical forest sources, is today US $ 5 billion in a single year, not far below that of tropical timber.

Europe's industry, as well as that of developing countries, depends, to an extent few people realise, on tropical species for its growth and prosperity. Apart from the critical 'service functions' of tropical forests in supplying moisture, and nutrients for agriculture rainforests produce many commodities of importance to trade and industry.

Spices originating from tropical forests earn, for example an annual $144 m in world trade. Wickerwork furniture and other Rattan products have a total traded value of over $4bn per annum. A single oil of tropical forest origin - palm oil - is used in products ranging from ice cream to tin plate, while the range of gums and resins of industrial importance is immense.

The health of Europeans is equally affected by rain forest products. Over one third of all drugs prescribed in the Community owe all or much of their potency to chemicals from wildlife - largely from rain forests. Today, drugs from curare, which tips the darts of Amerindians, play an essential part in sophisticated heart surgery, and are used to treat multiple sclerosis and Parkinson's Disease. Properties of the Rosy Periwinkle, discovered in the fast-disappearing forests of Madagascar, have assisted in the fight against leukemia. The Mexican Yam provides one of the active ingredients of the contraceptive pill, and the snakeroot plant from Indian forests relieves sufferers from hypertension and high blood pressure.

However, the most important use of exotic genetic material is in underpinning food security. In the 1920s, when disease decimated the sugar cane crop in the southern United States, genes from a wild species in Javan forests helped save the industry from ruin. In 1970 a wild coffee from Ethiopia's rapidly dwindling forests saved Latin American plantations from devastation and their national economies from disaster.

Economic losses due to genetic destruction will never fully be known. Hardly any of the 28,000 species of palm from tropical forests have been examined by scientists. Less than five per cent of the plant species in the world's rain forests have been intensively examined for their potential, and only a few hundred of these forests' 3 million animal species have been investigated. Recently a wild relative of corn was found in a small area of Mexican forest which could enable commercial corn to spring up each year, and hence abolish the major economic costs and environmental disruption of ploughing and seeding, as well as offering resistance to several important diseases.

The irony that these genetic resources are being destroyed at the dawn of an era when their potential may be multiplied through advances in genetic engineering needs no emphasis.

3. Environmental consequences

Tropical forest destruction has a variety of environmental impacts at local, regional and world levels.

Local and Regional Levels

At a local level, the balanced ecosystem of the rainforest protects soils, controls river flows, and mediates local climate and weather. On clearance for agriculture (including grazing) these sandy and lateritic soils which are often sandy and lateritic are liable to lose all fertility becoming desert in as little as 2 to 3 seasons. The soils of tropical rain forest lands vary from reasonable fertility to virtual sterility once vegetative cover has been removed. However infertile soils predominate.

In contrast to temperate ecosystems with thick humus layers the growth and decomposition cycle in tropical ecosystems takes place almost entirely above the ground through an efficient plant and animal growth and decomposition cycle. Meanwhile, the hydrological cycle is maintained in balance by evapo-transpiration, convection and precipitation. With such ecosystems, the utility of soils is largely as an inert platform to support the complex, highly evolved vegetative structure.

In such conditions local climate can be seen, in effect, as an extension of the vegetative cycle. Hence, drastic changes in precipitation are not only experienced after a lengthy and widespread deforestation, but are direct and immediate.

As regards the surplus run-off, rivers that normally rise and fall in the wetter and drier seasons, in accordance with natural imbalances introduced by "imported" water vapour arising from shifting weather and seasonal patterns, are liable, under deforestation, to produce damaging floods as the absorptive capacity of the forest is removed - a phenomenon particularly acute in regions of swamp forest. Dislodged silt not only

raises river beds but often fills irrigation ditches, contributing to waterlogging and leaching of soils.

A further environmental service important at the local level is, of course, the forest-based plant and animal life which sustains local and indigenous populations living in balance with the natural systems of the forest, but relying critically on the high level of genetic variety for their medicines as well as foods.

Similar environmental services are supplied by tropical forests to whole regions. Here, in particular, the downstream impact of deforestation is critical to ecological as well as economic and social stability. World publicity has been given to such phenomena as the 1988 Bangladesh floods, presumed to have been aggravated by Himalayan deforestation.

Similar phenomena can be found on a less dramatic scale elsewhere in Southeast Asia, in East and West Africa and in the Americas. The impacts of flooding and siltation on irrigated agriculture, hydro developments schemes, transport links and riverine and coastal fisheries may be particularly acute.

World level.

Attention has recently been drawn to the contribution of tropical forest burning to $CO^{=}$ accumulations in the atmosphere. Approximately half of the 'greenhouse effect' is due to the build-up of carbon-dioxide in the atmosphere, stemming primarily from the consumption of fossil fuels. But the amount of CO2 now being released by the burning and other forms of conversion of tropical forests is substantial. In 1980, the forest-burning release of carbon-dioxide was estimated at between 0.5 and two billion tonnes (in carbon) compared with more than 5 billion tonnes from the consumption of fossil fuels. Contributions of other "greenhouse" gases released by forest burning - especially methane - are at least proportionately significant.

Tropical forests may play a significant role in global atmospheric mechanisms in other ways. Forests of all kinds exchange moisture and energy with the atmosphere more intensively than do other types of land-surface cover. Tropical forests with their dense vegetation are especially important. Human modification of the working of their ecosystems may bear significantly on climate.

It is estimated, for example, that the Amazon basin has an annual precipitation of 12x10 cubic metres of water. At least 6.5x10 cubic metres are lost through evapotranspiration. This process causes condensation and contributes to cloud formation in the inter-tropical zone. This evaporation, which consumes a large amount of incoming solar energy (75% to 85%) reduces the average temperature of the intertropical zone. Water vapour, transported beyond the tropics via the troposphere, releases latent heat during precipitation (560 calories/gr.) Thus, the heat is transferred from tropical regions to higher latitudes influencing the temperature and, therefore, the climate of the peripheral temperate regions.

V. THE REMEDIES

Despite the grim prognosis for tropical forests, deforestation can be arrested and, possibly, reversed by actions designed to halt the process of destruction, establish the utilization of forest resources on a sustainable basis and by appropriate programmes of reforestation. . Priorities for national action, identified in the Tropical Forest Action Plan. prepared jointly by the World Bank, FAO, UNDP and the World Resources Institute and first published in 1985, are summarized below. The measures to be adopted will of course vary from region to region and country to country. They will need to be pursued over a long period of years and with unremitting vigour. The conservation needs in the open forest of the Savanna are not necessarily the same as those of the 'closed' rainforests. What follows is, however, a demonstration that there are real needs as well as practical possibilities for national conservation measures which can and should be supported by international efforts, including those of the Community and Member States :

1. Investment and technical assistance priorities.

(i) Forestry in Land Use: change land-use practices to stabilize and rehabilitate degraded lands, and to establish sustainable farming and grazing systems. Integrated approaches are required combining forestry, agriculture, soil conservation and livestock management. Agroforestry has a major role to play through sustaining or increasing agricultural production, satisfying basic needs for wood, fodder, and other forest products, and improving rural employment and income. Priority areas for investment and technical assistance include: integrated watershed management and desertification control.

(ii) Forest-based industrial development: meet domestic demands for industrial forest products: limit imports, and sustain exports, in those countries with suitable conditions for an expanded industrial forestry programme. Priority areas for investment and technical assistance include: protection and management of natural forests; accelerated industrial reforestation (avoiding the conversion of natural tropical forest and the displacement of forest-dwelling indigenous peoples); more intensive use of existing resources, e.g. improved logging practices to reduce damage and waste.

(iii) Fuelwood and energy: manage demand and increase supplies of fuelwood from outside tropical forest areas to meet the needs of rural and urban populations and industrial users. Priority areas for investment and technical assistance include: more efficient use of fuelwood, e.g. more efficient cooking-stoves, recovery of logging waste; fuelwood substitution; improved management of existing forest resources; on-farm tree planting; and fuelwood plantations.

(iv) Conservation of tropical forest ecosystems: protect sufficiently large areas of tropical forests to conserve biological diversity and maintain environmental stability. Priority areas for investment and technical assistance include: reduction of pressures in areas adjacent to threatened

tropical forests by intensifying agriculture on non-forest lands etc, as well as the establishment and management of protected areas.

(v) Strengthening institutions: strengthen the institutional framework within countries to plan, develop, implement, monitor, and evaluate policies and programmes for sustainable forest land use. Priority areas for investment and tecnical assistance include: planning and administration, research, training and extension work.

Investment needs for a five-year programme of accelerated action were assessed on the basis of the above priorities for 56 countries seriously affected by deforestation, special account being taken of each country's likely absorptive capacity for new investment. The level of public and private investment needed to make an impact on tropical deforestation over a five-year period was estimated to be US $8 billion. About US $5.3 billion (two-thirds of the total) would be needed for the 56 most seriously affected countries reviewed. At least 30% of the investment would be agriculture related.

Half of the total US $8 billion, or US $800 million a year for five years, would need to be mobilized by the development assistance agencies, with the remainder coming from national governments and the private sector. This would amount to a doubling of external aid to combat deforestation.

The TFAP makes it clear that even resources of this magnitude would represent only an initial approach to the most urgent problems of deforestation and, if progress is to be made over the coming years, sums considerably in excess of this will need to be raised. Moreover, it is clear that direct efforts to combat deforestation will fail to be fully effective without parallel efforts in the fields discussed below.

2. Economic Policies and National Development Planning.

Experience has clearly shown that narrowly-focussed action within the forestry sector will be ineffective in controlling deforestation and protecting large areas of remaining tropical forest. Because many policies and practices in agriculture, energy and other sectors are a significant cause of forest destruction, many of the solutions to forest destruction must come from outside the forestry sector.

Forest land use planning must be approached within the broader context of national development planning. Adverse policies within the forestry sector and in other sectors such as agriculture that lead to accelerated depletion of forest resources must be changed and policies to promote sustainable forest management and reforestation must be established.

Major areas for policy reform include:

(i) Land reform: Equity and access to land is an important policy issue that cannot be avoided if pressure on tropical forests is to be alleviated. Skewed land distribution due to historical and political patterns of development has forced rural people to migrate into ecologically fragile forest areas with poor soils and onto steep forest uplands. Strong

political commitment by national governments to pursue policies of land reform would, in the short term, probably do more to relieve pressure on forest lands than any other single policy intervention.

(ii) Correcting inappropriate policy incentives within the forestry sector: Many governments are directly or indirectly subsidizing deforestation through economic policies - such as investment incentives, tax and revenue systems, and highly favourable terms of access to public forests - that lower the net costs or increase the private profitability of commercial forestry exploitation. These powerful economic incentives promote short-term consumption over long-term management, leading to much higher rates of forest exploitation than would be the case without such policies. Policy reform, e.g. raising stumpage prices and expanding the use of competitive bidding for concessions, to replace inappropriate incentives with measures that encourage private sector investment in sustainable forest management and reforestation would help conserve forst resources, raise economic welfare, and reduce fiscal burdens on governments.

(iii) Correcting inappropriate policy incentives outside the forestry sector: Many governments have instituted policies, such as subsidies, low-interest loans and tax breaks, that accelerate the conversion of forest lands to other uses and primarily benefit large landowners. For example, government-supported agricultural settlement schemes and cattle-ranching schemes have become a major cause of deforestation in several southeast Asian and Latin American countries. Major areas for policy reform could include:

- eliminating public subsidies, tax breaks, low-interest loans, and other policy incentives that are causing rapid conversion of tropical forests to unsustainable land uses
- revising national development policies that have led to roads, dams, and mining projects in forest areas, and that have encouraged land speculation in tropical forest frontier lands
- revising government policies that subsidize livestock production in arid or semi-arid regions where stocking rates have far exceeded the sustainable carrying capacity of savanna rangelands
- identifying mutually supportive investment and policy reform measures in the agriculture, energy, industrial, and population planning sectors that can contribute to relieving development pressures on forest lands.

(iv) Aid agency investment. Aid agency funding has played a major role in large-scale development projects that have become a significant cause of tropical forest destruction and displacement of indigenous peoples. The development assistance community could make a major contribution to economic policy, land use planning and other policy reform by:

- adopting and implementing strict policy guidelines with respect to the conservation of tropical forest ecosystems. This would include examining the full range of economic, environmental, and social impacts associated with any proposed development with potential major effects on tropical forests, and witholding funding from projects that do not conform to these new policy guidelines
- making provision for setting aside and protecting critical ecosystems in situations where aid agency-supported development projects are likely to encroach upon areas of unique biological importance.

in situations where aid agency-supported development projects are likely to encroach upon areas of unique biological importance.

(v) Integrating forest resource management into national development planning. The contribution of forests to protecting the soil and water base for agriculture, to meeting rural and urban energy demand, and to industrial development - and, conversely, the costs of forest depletion - are significantly understated in national development plans. To improve the integration of forest resource management into national development planning, high priority should be given to:

- undertaking country-level assessments of forest resources, through remote sensing and other techniques
- developing economic methodologies to factor the costs of forest resource depletion into national income accounting, and to better quantify the benefits of investment in forest conservation measures, in order to improve national planning and resource allocation decisions.

3. Research

In many developing countries, national forestry research institutions remain a weak appendage of the government forest department and have little political support. They suffer from a shortage of trained personnel, poor facilities and inadequate funding. National governments and development assistance agencies need to address the following policy issues in order to increase the contribution of forestry research to forest land use problems in developing countries:

- raising the generally low political and financial support of forestry reseach within developing countries.
- concentrating forestry reserach efforts on a few priority research topics with high potential to address rural forestry needs and alleviate rural poverty
- ensuring more effective integration of forestry and agricultural research at the field level, and establishing stronger links with extension programmes to ensure systematic application of agroforestry research trials.

VI. PAST AND CURRENT EFFORTS RESPONDING TO TROPICAL DEFORESTATION

A International Action

So far as official recognition of the problem of tropical deforestation is concerned, the first significant action was taken in the early 1980s.

1. The Tropical Forestry Action Plan (TFAP)

FAO initiated the Tropical Forest Action Plan in 1985 as a development project programming venture conducted jointly with the World Bank and the UN Development Programme (UNDP). The non-governmental World Resources Institute, based in Washington DC, was also involved in drawing up the Plan.

The TFAP is not an organization but a mechanism designed to coordinate the efforts of a variety of entities - governmental, non-governmental national/international, private sector and local communities, cooperating together towards a single overall objective - the conservation and rational use of tropical forest resources in support of sustainable socio-economic development.

The TFAP has evolved not as a rigid central plan but a framework within which national plans for the forestry and related sectors can be developed , tailor- made to the needs of a country which has asked for assistance under the TFAP.

Once a country has requested assistance, typical steps in the formulation and implementation of the TFAP process are:

* review of the forestry sector to devise or update the national forestry development plans
* Preparation of a specific strategy for action.
* Adoption of legislative or institutional measures
* Identification, preparation and implementation of relevant projects.

The TFAP operates at the international level through regular, informal meetings of forestry advisors representing various government/non-governmental organizations, international and national agencies involved so as to facilitate coordination, promote commitment and review progress of the TFAP process in individual countries. A Secretariat (in the Netherlands) and a Coordinating Unit (in FAO Rome), provide overall support to the TFAP.

As noted earlier,

The TFAP's original Plan of Action, produced in 1985, estimated that participants would need to raise some $8 bn in public and private investment over five years, 1987-91. Of this, US $5.3 bn would be needed for the 56 most seriously affected countries reviewed in the study. At least a third of the proposed investment is concerned with fuelwood and agro-forestry, with industrial use and land use projects accounting for 25 % and 17 %. Investment costs by region are Asia 50 % (12 countries), Latin America 30 % (16 countries) and Africa 20 % (28 countries). See Annex B. The TFAP Secretariat has had limited success in meeting its US $ 8bn target: less than half of the required resources were commited by 1989.

2. ITTO - The International Tropical Timber Organization

The impetus behind ITTO was a developed country - mainly Japanese - concern at the threat posed by deforestation to their sources of tropical timber supply. IITO was created in the context of UNCTAD initially as a commodity agreement. However, the environmental importance of tropical forests features significantly in ITTO's terms of reference (The International Tropical Timber Agreement). This puts among ITTO's objectives, "sustainable utilisation and conservation of tropical forests and their resources, and maintaining the ecological balance in the regions concerned."

The purpose of the Agreement is to provide an effective framework for cooperation and consultation between tropical timber producing and consuming memebers and to expand international trade in this product through structural market improvements.

The aims of the Agreement are : to promote and support research and development with a view to improving forest management and wood utilization, taking into account local conditions; forest management; to encourage producing members to ensure the greatest possible value added by processing the product; to improve marketing and distribution of producing members' exports. It also provides for the encouragement of national policies aimed at sustainable utilization and conservation of tropical forests and their genetic resources, and at maintaining the ecological balance in the regions concerned. As will be clear, the Agreement does not contain any economic provisions as such.

The ITTA provides for commercial instruments but also for the pursuit of wider objectives (e,g, collection of data on products but also tropical forest management and utilization and environmental policy.

For the first time there is an international framework where timber trade problems can be discussed in close connection with forest conservation issues, without neglecting the prospects for economic development that tropical timber offers the developing countries.

Despite ITTO's Japanese backing it has remained in its three years of existance a fragile institution. Its annual operating budget for 1988 was approximately equivalent to 2 MECU, a similar amount being pledged to its projects. Total project funds so far have amounted to approximately the equivalent of 5 MECU.

ITTO's funding picture has reflected the uncertainty of most governments as to its potential effectiveness. Almost all of its 42 producer member governments are in arrears on their mandatory contribution (as is the US, due to its special budgetary constraints (under the Gram-Rudman Act) - a factor which may affect the low level of support on the part of consumer members. Few among its consumer membership have come forward with any funding for its projects, (exceptions are Switzerland, the Netherlands the the Federal Republic of Germany, the Nordic countries and Japan, but non-Japanese contributions so far have only amounted to $2.0 million). The Community itself is a member of ITTO.

3. Other Intergovernmental Organisations

a) The World Bank and the IMF

The World Bank's sectoral lending profile showed no significant priority for projects calculated to alleviate pressures on standing tropical forest until its involvement in the Tropical Forest Action Programme (TFAP) in 1984/85. Prior to this, while there had been no significant lending for the commercial development of tropical forestry as such, loans for projects involving the clearance of closed primary forest, notably to Brazil for developments associated with Electronorte on the Tocantins River in Amazonia, and the Carajas mining development, and to Indonesia for primary forest clearance in East and South Kalimantan, asociated with the Transmigrasi Programme, were not uncommon and were renewed or replicated up to, and including, 1988.

However, a major reorganization of its management structure took place in the World Bank in 1987 - 1988 which is likely to effect lending for all projects involving tropical deforestation, a point reinforced by the joint World Bank/IMF Berlin Declaration (Berlin 1988) on the importance of the environmental considerations in development work made at the Bank/Fund annual meeting of 1987. The Bank announced that it expected forestry expenditure to rise from US $ 138 million (1986) to US $ 500 million by 1989.

The policy leverage available to the International Monetary Fund surpasses that of the project-oriented development banks in scale and scope. However, the IMF addresses itself to overall national budgetary financial and monetary conditions, and has not sought fit - at least overtly - to stipulate conditions regarding the use and management of one or other natural resource when assessing its financial and monetary policies vis à vis member countries.

At present the IMF's Board is "sensitised" to environmental issues due in part to manifestations such as the Berlin Declaration. However the absence of a direct link between IMF lending (its technical, budgetary and financial condition-setting) and the "site-specific" impact of project lending has so far been seen as a political obstacle to more overt financial involvement.

It is likely and desirable as well that increasingly in the future the environmental implications of structural adjustment packages receive increased attention. Structural adjustment measures should in fact take account of environmental effects; they may well be environmentally beneficiary and improve the situation in the countries concerned. Mmany developing countries may in fact not be gaining anything at national economic level from the exploitation of their tropical forests - because of tax concessions and subsidies and short-term agreements which contain no sort of incentive to the timber exploiter to re-plant. Other policy considerations important at the national level, which are relevant to tropical forests and which could be taken into account in structural adjustment measures are described in V.2.

b) The Regional Development Banks

The Inter-American, Asian, African and Caribbean development banks all have explicit environmental procedures and allocation of responsibilities for Environmental Impact Assessment (EIA). Each has a specific focal point for overall environmental responsibility. The pattern of their lending has shown a modest increase in the forestry sector and almost all of their lending in this sector has been within TFAP priority areas. There has, however, been virtually no environmentally-oriented lending by these banks to projects for sustainable yield management of the natural forest, nor any marked awareness that environmental aspects in other than environmentally-oriented projects (e.g. agricultural projects) are often more important for the environmental situation than specific environmental projects.

c) UN Development Programme (UNDP)

The UNDP is heavily involved in promoting the TFAP. Its pre-investment activitites (largely centred on resource surveying, training and institution-building) are vital to improved development performance in tropical forest management. UNDP's range of pre-investment funding has in the past been economically focussed. However, an increasing number of its projects address environmental aspects of development.

d) UN Environment Programme (UNEP)

UNEP has tended to concentrate on sponsoring research and discussion of environmental consequences of deforestation (CO^2, loss of species diversity, etc) rather than upon measures to improve tropical forest management. Its role has always been a coordinating and catalytic organization acting as an environmental watchdog to ensure that members of the UN family take full account of environmental aspects in their own work programmes. Its work has been severely inhibited by budgetary constraints. However, the International Framework Treaty on Biological Diversity which is now being prepared may be of significance, particularly as far as the conservation of genetic resources is concerned.

e) (United Nations on Trade and Development (UNCTAD

UNCTAD has no direct involvement with the tropical forest issue. However the Common Fund Agreement, which enters into force on 19th June, 1989, may

open up an opportunity for supplementary funding : under the Common Fund's Second (voluntary) Account, governments (for example Member States) may contribute funding for research and development activities of international commodity bodies. Funding from the Second Account will depend on designation of 'international commodity bodies' according to criterion established in the Common Fund Agreement. ITTO could well be a candidate along with numerous other institutions.

h) Convention on Amazonian Cooperation

The Convention on Amazonian Cooperation was signed in Brasilia in 1978, and entered into force in 1980. Contracting parties are : Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Surinam, and Venezuela. Most recently (May 1989) the Heads of State/Government of the Contracting Parties signed the Amazon Declaration, reaffirming the sovereign rights of each Amazon country freely to manage its natural resources, but at the same time expressing willingness to cooperate with other countries and International Organizations on the implementation of national and regional projects and programmes in the Amazon region.

4. Other co-ordinating Efforts

a) Bellagio

A recent development has been the quasi-institutionalisation of the 'Bellagio' meetings held since 1987. The Bellagio meetings (in 1988 they focussed on tropical forest research) have been used for a wider presentation and airing of understandings reached by the TFAP. The informality serves a useful purpose in enabling senior officials to meet with politicians and opinion leaders not normally within the specialist circle of those concerned with tropical forestry.

b) Committee of Development Financing Institutions on the Environment CIDIE)

Donor policies and practices on environmental protection have been coordinated by the Committee of Development Financing Institutions on the Environment (CIDIE), of which the Community, through the Commission is a member. CIDIE has focussed in the past on the forestry issue (1981-2). However, the impact of CIDIE on the policies of its member organisations has been marginal at best in the field of tropical forestry is achieved by an exchange of information and experience.

B. Community and National Actions

1. Community Actions

Forestry Development Activities in Developing Countries

In the mid 1980s, EC financial assistance to forestry projects in developing countries totalled approximately 20 MECU a year and was made available either through specific budget lines, e.g. 946, or within the framework of the Lome Convention. EC support was directed towards about 40 major projects or components of projects and other smaller activities.

In terms of distribution, 54 per cent was committed to Africa, 35 per cent to Asia and the Pacific and 11 per cent to Latin America and the Caribbean.

Since 1986, Community aid to tropical forestry has increased steadily.
Divided according to the 5 TFAP sectors, the percentage of EC assistance is as follows:

1. Forestry in land use (including agroforestry)	59 %
2. Forest-based industrial development	21 %
3. Fuelwood/wood energy	11 %
4. Conservation of tropical forest ecosystems	0.5 %
5. Institutional strengthening (research)	8.5 %

Starting with the Third Lome Convention, the Commission and its ACP partners have chosen to concentrate aid on rural development and conservation of natural resources. 60 - 80 % of the total national programmable resources and half of regional resources is spent in the rural sector. Much of the Commission's assistance in the forestry subsector takes the form of forestry components within integrated rural development programmes or projects.

The trend of gradually increasing the Commission's assistance to forestry, already outlined in the Commission's Communication of January 1986 on the Conservation of Natural Resources and countering desertification in Africa, is likely to continue. Negotiation of the new ACP-CEE Convention has led to agreement that much greater emphasis should be placed in the new Convention on environmental protection and the conservation of natural resources,

It is expected that the importance of forests will be further emphasised in the Commission's future development cooperation programmes, and that reafforestation and conservation of remaining forest resources

will remain the important elements in controlling desertification and within rural development as a whole.

ACP (Stabex)

The financial transfers under the Stabex account of the Lomé agreement have included tropical timber. Stabex support since 1975 has been about 140 MECU (Lome I : 40, Lome II : 0.35, Lome IV : 100 MECU). The major benefitting country is Ivory Coast, followed by Congo, Gabon, Ghana and Cameroun and smaller amounts for Central African Republic, Guinea Bisau, Solomon islands, Belize and Western Samoa. The amounts are partly used for reafforestation and further for other activities, including diversification.

Stabex-source funding in this sector has, however, been recently significant (50m ecus for 1985/6) when compared with current range of forestry projects financed by the FED.

Tropical Forestry Research

- Science and Technology for Development Programme.

Since 1983 tropical forestry research projects have been and are being carried out jointly by laboratories from developing countries and the European Community within the framework of the Programme "Science and Technology for Development" (STD). All aspects of forestry research are being covered by this Programme, namely resource evaluation, socio-economy, soil and water conservation, environment protection, surveys and genetic improvement, management of forest ecosystems, agroforestry and technological use of tropical forestry products. Under the first STD Programme (1983-1986), 9 projects have been co-funded (50 % cost sharing) by the Community with 1.3 MECU (budget line 7394). Under the second Programme (1987-1991), 11 projects are currently being implemented and co-funded with 3.3 MECU. The total costs of these projects amount to at least twice these amounts.

- International Scientific and Technical Cooperation.

Within the framework of the agreements with Asian and Latin American countries the European Community cooperates in a wide range of scientific fields, in particular the environment. It has been agreed with the scientific authorities of the countries of the Amazon Treaty at the meeting of the joint sub-commissions for Science and Technology held on 15 and 18 March (Brazil) and 17 April (Andean Pact), to support research actions for the conservation of the Amazon forest. These activities will become, on the request of those countries, a special regional programme coordinating the activities to be undertaken on a sectoral and national level.

The two above programmes, "Science and Technology for Development" and "International Scientific and Technological Cooperation" follow the same philosophy : to provide a true partnership between researchers from Europe and from developing countries through joint research, to strengthen the European tropical research potential and to increase the local research capacities of developing countries. This means to strengthen the

scientific basis which will lead to increasing awareness of the scientific dimension of development at the level of decision makers. Both programmes aim at supporting national research institutes of developing countries to enable them to contribute to the advances of science when solving scientific problems of their countries. Scientists from developing countries have to play a key role in the conservation and sustainable management of forests of their countries.

The R & D Programme of the Joint Research Centre included applications of earth observations by satellite-borne sensors. These remote sensing techniques are a useful tool for research into deforestation and, therefore, they can be utilized for the control of the tropical forestry situation.

Other Community Activities Affecting the Tropical Forest Resource

Apart from the activities within the framework of the Lome Convention, other Community resources have been involved in funding activities in tropical forest lands.

The Commission has policy-oriented responsiblities in French Guyana, a territory which falls under Objective I of the Structural Funds. It should also be noted that the Commission's recent Communication for a Community Strategy and Action Programme for the Forestry Sector (COM (88) 255 final) while relating primarily to actions to be taken within the European territories of the Community, refers to technical and financial support of the Community for forestry projects in developing countries, which should be integrated into development programmes in a manner consistent with the principles and aims of the Community action programme for the conservation and rational utilization of natural resources.

The European Investment Bank (EIB) has made several loans for hydropower projects which have potential or actual impacts on tropical forests.

The SILVA Conference, organized in 1985 at the initiative of President Mitterand, brought together a wide-range of interests and actors, concerned with the future of forests and forestry not only in Europe but also in the third world.

2. National Bilateral Aid Programmes

There is substantial tropical forest management expertise deployed through member states' bilateral aid programmes, and resources to this sector have recently been substantially increased. In total the volume of bilateral and multilateral development aid directed to forestry (including through the Community) amounted to US $ 908.1 million in 1986.
Of this total, $ 434.5 million was bilateral funding approximately two-thirds of which came from EC Member States, $ 300.0 was multilateral (through development banks and the Community) and $ 173.6 channelled through UN Organizations. (FAO 1988)

(through development banks and the Community) and $ 173.6 was channelled through UN Organizations. (FAO 1988)

An FAO analysis of bilateral and multilateral cooperation in forestry shows a high degree of congruence of philosophy as regards tropical forestry development. Key features of this thinking are: use of forestry and agro-forestry to improve the living conditions of the rural poor through integrating forestry measures into general agricultural programmes for rural development; involvement of local people especially in tree planting schemes; stress on the sustainablility of use of existing and new forests; emphasis on instutional strengthing through training extension demonstration and research; development of mechanisms for better use of forests and of plantation schemes to meet needs for food fuelwood construction wood, together with measures for erosion and desertification control.

Perhaps the largest single source of grant and soft-loan funding for environmentally-oriented development activities in tropical forest areas is USAID. A considerable volume of funding from this source is food aid arising from loan repayments "recycled" in food-for-work programmes focussed on tree-planting.

Japan is the world's biggest user of tropical timber. Until recently Japanese aid to the forestry sector in developing countries aimed essentially to promote forest industry in recipient countries. Currently there are 13 Japanese aid projects in forestry in Asia, Africa and Latin America. Most are for reforesting barren or degraded areas for future use in commercial logging. Some have been criticised for clearance of primary hill forest and its subsequent replanting. Development projects of the Nordic countries in the forestry sector tend to be technical and capital assistance programmes for timber exploitation, drawing on Scandinavian timber technology, and expertise.

C. Non-Governmental Institutions

1. Timber Trade Associations

Commercial Timber Trade Associations may be divided into two types: those concerned directly and specifically with promoting trade; and those concerned with research and timber use development. All are activly concerned with promoting the import and use of tropical hardwood: all are equally concerned today at the threats posed to this trade: (a) by consumer resistance on environmental grounds; (b) by future threats to the resource base. Hence the Anglo-Dutch initiative of the Timber Trade Federation (TTF) UK and Nederlandse Houtbond proposing a levy or surcharge on tropical hardwood timber entering the Community, with the funds raised to be channeled to improved forest management and reforestation.

The Community-wide timber federation - Union Commerciale de Bois Tropicaux (UCBT) - has the responsibility for co-ordinating and negotiating this initiative among trade associations or member states, and negotiating the levy's application with the Commission of the Community. UCBT and

member Associations are currently discussing parallel action with the Japanese importers federation and the International Hardwoods Products Association (IHPA) which represents US tropical hardwood importers.

A substantial body of timber use and technology expertise relevant to aspects of tropical forest conservation resides in various national timber research organisations, such as the UK's TRADA (Timber Research and Development Association). The national research and market development bodies of the Community are associated together in the Association Technique Internationale de Bois Tropicaux (ATIBT).

2. Environmental and Development NGOs.

In recent years environmental and development NGOs have played a prominent role in alerting public and official attention to the tropical forest crisis. Their part in helping to bring ITTO into being and ensuring its environmental dimension is generally acknowledged as important, as is their activity in helping to shape the TFAP.

From being largely promotional and media-oriented, a number of environmental NGOs have more recently joined the major development NGOs in undertaking project work in tropical forest countries. In some cases, notably that of WWF, they have joined with governments and NGOs in ITTO producer countries in operating pioneering projects seeking to demonstrate how economic value and local benefit may be extracted from tropical forest without involving its destruction or degradatgion. At least one experimental project along these lines has received Community support.

Such NGOs will continue to be close observers and participants in the work of tropical forest conservation and sustainable utilization. Their capacity has not yet been fully tried as participants alongside governments and international agencies in this field.

The principle limitation on further use of such NGOs by the Community in cooperative efforts is likely to be their acceptability in the eyes of timber producer country governmentsm, some of which have taken exception to representations of such NGOs for example on behalf of indigenous forest dwellers.

VII. COMMUNITY STRATEGY FOR THE CONSERVATION OF TROPICAL FORESTS : P[illegible] MAIN ELEMENTS

It is clear from the foregoing that the causes of tropical deforestation are many and complex. Yet there are measures which can be implemented at national level by those countries which still possess tropical forests which could have the effect of mitigating and even reversing present trends. The remedies, of course, are often as complex as the causes. They touch on the forestry sector directly, and the associated sectors of agro-forestry and agro-industry. But they also involve the wider spectrum of development planning and policies, going to the heart of economic and social policy.

The preceding section of this paper outlined past and present international efforts to help tropical forests countries come to terms with the present crisis. Within that wider international effort, the Community has a special role to play. The Community is bound by historical and political ties to parts of the world - especially Latin America and Africa - where the tropical forest resource is still of immense importance. The Community continues to pursue major objectives in the field of development aid, whether through the Lome partnership, or through specific cooperation agreements with the nations of Latin America and Asia. The Community is, moreover, affected - as we all are - by the global threats to the environment which may result from the continued destruction of the tropical forest, in particular through the contribution forest-burning may make to the greenhouse effect and global climate change; the Community is also affected, as is mankind as a whole, by the other consequences of deforestation, for example the loss of genetic diversity.

The rest of this section sets out the main elements of a Community strategy for the conservation of tropical forests, taking into account the outline already presented of causes, consequences, remedies and past and current efforts to respond to tropical deforestation.

Once again, it must be stressed that Community action should be placed clearly within the context of wider international action to meet the challenge of this overarching crisis.

The five areas for possible action are as follows :

1. Development aid and cooperation.

2. Actions relating to the trade in timber.

3. Development of additional resources.

4. Debt and environment.

5. Research.

1. Development aid and cooperation

Actions aimed at the conservation of tropical forests are the responsibility first of all of the states concerned. Many different pressures determine the policy of these states: the need for funds, the need for rural land, social pressures - these are a partial explanation for the complexity of the problem and of the difficulty in finding simple standardized solutions. Certain measures to stop felling taken by governments (Thailand, Indonesia) may encourage the emergence of new exporters. Whence the necessity for dialogue and concerted actions between the European Community, the states concerned and the international institutions.

In general terms, Community aid and development cooperation programmes should either directly or indirectly promote activities that avoid deforestation and at the same time should provide alternative solutions, such as the promotion of sustainable techniques, introduction of agro-forestry techniques, creation of plantations, etc. (see Section V).

In particular, the Community and the Member States should strongly support tropical forest countries who are attempting to carry out forestry-programmes within the framework of the Tropical Forest Action Programme. As noted earlier, the Tropical Forest Action Plan identified US $ 8 billion of worthwhile tropical forest-related investment over a five-year period. Only a fraction of the necessary support has currently been committed. This Community support should take the form of active participation in the forestry policy sector reviews and funding projects identified by the reviews.

Much could be done in the context of the new ACP-EEC Convention to assist ACP countries, to conserve their forests and to develop appropriate techniques, legislation, institutions and management systems to enable them to exploit the full range of forest products and services in a rational and sustainable manner.

The cooperation agreements between the Community and the countries of Latin America and Asia, both bilateral and regional (Andean Pact, Central America, ASEAN, SAARC), without excluding other possible vehicles, constitute a sound institutional basis for the development of a significant cooperation in the field of the environment, for example the conservation or restoration of tropical forests. However, they do not provide for specific means in this respect.

The principal instrument of intervention remains the financial and technical aids in favour of developing countries of Latin America and Asia (283 MECU in 1989), concentrated on rural development and the 'poor' countries, a fact which excludes for the time being the large 'tropical forest' countries such as Brazil. It is necessary therefore to examine the possibility of introducing the environment-tropical forest priority in support of the developing countries in the cooperation agreements and in the other existing instruments, notably the financial and technical aids.

Furthermore, the possibility should be examined of strengthening budget line 946 (Ecology in developing countries), which amounted to 6 mecu in 1989 and was destined to help the identification of projects and programmes to be financed via the classical tools of cooperation (the EDF for the ACP countries, the financial and technical aids for the LDC's, ALA for Latin America and Asia); a significant percentage of this amount could be reserved a priori for the tropical forests.

More generally, both in this context as well as in the Lome context, forest conservation policy should be seen in close liaison with other economic policies such as agriculture, energy and industry, and with social policies relating to the distribution of land, the reform of social structures, the encouragement of Community participation, etc. The Community should establish improved guidelines for the financing of projects having an impact on tropical forests (roads, dams, agriculture etc.)

However, without major new resources or reallocation of current resources (see section 3 below) it would be hard for the Community to increase substantially its support of national tropical forest programmes.

Going beyond the framework of the Community institutions, there is a strong case for far greater coordination of Member States' positions in bodies such as the World Bank and the regional development banks as far as the issue of tropical forests is concerned. In the past, Member States of the Community have not always exerted the necessary pressure to support programmes and projects aimed at the conservation of tropical forests and to avoid financing programmes and projects likely to have a deleterious impact on such forests.

2. Actions relating to the trade in timber

(a) ITTO

The Community should support ITTO, particularly through a more active coordination at Community level as far as the conservation aspects of ITTO's work is concerned.

The Community was strongly in support of the establishment of ITTO and has since played a highly active role in the early years of ITTO's activities, The special character of the agreement is illustrated by the categories established for technical commottee work namely :

- statistics on forestry economics and market information,
- reforestation and forest management,
- forest industries.

The Community has throughout stressed the need for the ITTO Secretariat to develop a realistic work programme. Aspects which have received particular attention include the need to establish criteria which

would facilitate decisions on priority areas for ITTO, as well as a practical methodology for the evaluation of projects. ITTO is of course handicapped at this stage by a relative lack of financing for a substantial number of projects.

In any event the Commission has strongly taken the view that rather than try to become yet another funding organisation (for which it does not have the resources) ITTO should put a great deal of emphasis on developing what is broadly termed the 'normative approach'. This implies the establishment of a set of standards. This is a task that is being undertaken by no other international organisation. It basically involves generating advice and guidance on sustainable tropical forest management, in a concerted attempt to ensure sustainable development and conservation of those forests. A number of areas are of particular interest such as the preparation of model contracts and model laws for tropical forest exploitation, advice on royalties, handling of concessions, replanting conditions etc, and the definition of a standardised approach to the granting of licenses, based on well defined criteria.

(b) Codes of Conduct

In the Community's Fourth Environmental Action Programme, adopted by the Council on 19 October, 1987, it is indicated that there should be a "re-examination of the trade and aid policies of both the Community and the Member States from the standpoint of their impact on tropical forest conservation; and the promotion of a voluntary code of conduct among timber companies based in the Community to ensure that imports of tropical hardwoods only come from concessions that include ecologically positive management policies (including in particular the acceptance of appropriate obligations to renew and replant and to restore damaged lands and landscapes)".

Such a Code of Conduct might in the first case be elaborated by the ITTO on the instigation of the Community. But consideration should be given to the adoption of the Code by firms based in the Community, possibly through the means of an appropriate Community instrument.

(c) Extension of protected species in the framework of CITES

The Convention on the International Trade in Endangered Species (CITES) should be examined to see if protection given especially to endangered species of tropical forest trees is adequate. Here preliminary enquiry appears to indicate that the CITES listing of such species needs urgently to be updated. It is suggested that the forestry department of FAO be consulted regarding a revised list of rare and endangered species. The Community has in the past funded a study of the need for a monitoring facility on this matter. Its findings should be followed up. Appropriate modifications could be made to the Community's own Regulation implementing CITES.

3. Development of additional resources

Existing resources available for programmes aimed at the conservation of tropical forests fall far short of what is needed and can usefully be spent (for example in accordance with the priorities of the Tropical Forest Action Plan). Bearing in mind the special role played by tropical forests in the maintenance of global climatic stability and genetic diversity, there is a need to mobilize greater international resources for development assistance programmes in general and for tropical forest conservation in particular. This should be done both at EEC level and at the wider international level.

At the EEC level, possibilities for all allocating additional resources to tropical forest programmes include :

- as discussed under (1) above, devoting more resources to tropical forests within existing budgetary envelopes, e.g. Lome or the cooperation agreements with Asian and Latin American countries.

- developing new mechanisms which could permit increased support to worthwhile projects, whether in Asia, Africa or Latin America, which have been identified through the TFAP process. This could also permit the financing of actions aimed at rational exploitation or at actions which provide the populations concerned with alternative means of production and which therefore avoid the necessity for them to exploit irreplaceable resources in an indiscriminate way.

It is clear that, at the present time, the Community's budgetary possiblities will necessarily place limits on the type of actions mentioned above. However, in this connection, all new possible sources of finance should be examined, both within and outside the context of the Community budget, including those related to the better application of the 'polluter pays' principle.

At the international level, the Community should stress the need for similar commitments by our major industrial partners as called for in the conclusions of the Summit of the Main Industrialized Nations which took

place in Paris in July 1989. The Community should, moreover, also stress the need to link international efforts for the conservation of tropical forests with other issues of global concern, notably the effects of global warming and the depletion of the ozone layer. It seems clear that if these vital resources are to be preserved, as they must be, developed countries will have to contribute in many ways.

4. Debt for conservation strategies

Action taken to reduce the debt burden carried by developing countries will, other things being equal, free resources for development and investment, including of course projects for "sustainable development" or environmental protection, such as rainforest conservation.

On the other hand, continued economic pressures, including the debt burden, invariably lead to continued environmental pressures. It is no coincidence that the major debtor nations are, in many cases, also the nations where the tropical forests, once extensive, are now being rapidly depleted or degraded.

The Community itself is not a major creditor (except through the European Investment Bank). However, several Member States are major creditors and it may be useful therefore to have a coordinated perspective on the "debt-development-environment" question.

More generally, , given the intrinsic links between environment and development, there seems a priori to be no reason why international financial institutions such as the IMF and the World Bank (and the Community Member States who are represented on the Governing Bodies of those institutions) should not be concerned by countries' environmental as well as economic performance.

Recent developments in debt reduction strategies could create opportunities to further conservation objectives on a much larger scale than the much more limited debt for nature swaps concluded so far. The Community should support the exploration of these possibilities.

5. Research and development

The Second Bellagio Meeting on Tropical Forestry (30 November and 1st December, 1988) emphasized the need for a major effort to be devoted to forestry research in developing countries. Institutions need strengthening. Existing tehnologies and research knowledge needs to be disseminated to practitioners. International organizations or groupings such as the CGIAR (Consultative Group on International Agricultural Research) needed to be strengthened. The Community's contribution to national and international tropical forestry research efforts should be an integral part of the overall Community strategy for the conservation of tropical forests. Tropical forest research should be eligible for support from, inter alia, the Community tropical Forest Fund mentioned above.

As an immediate measure the Community should increase the funds devoted to tropical forestry research. The efforts to build up a European tropical forestry research network should be strengthened in pursuance of the decentralisation policy. The mandate of such a network should be to constantly monitor tropical forestry research and developing activities carried out by institutions in Europe and the Third World, to coordinate those activities, to serve as a forum for tropical forestry research and development and to assist the Commission in this field.

The follow-up Programme of STD under the forthcoming Framework Programme of Community research should provide substantially more funds devoted to tropical forestry research according to a more problem/solution oriented approach allowing for the build up of "critical masses" on a regional basis by strengthening in particular national forestry research institutes.

Research activities under the bilateral cooperation agreements (International Scientific and Technological Cooperation, budget line 7394) should be intensified to achieve a significant impact for the conservation and sustainable use of tropical forests.

ANNEX A

I

FORESTS COVER SOME 40 PER CENT OF THE WORLD'S LAND AREA

Area	Total (M ha)	Broadleaved closed forest	Coniferous closed forest	Fallows/ open forest
Temperate	1,733	371	1,075	287
Tropical	2,338	1,160	34	1,144
TOTAL	4,071	1,531	1,109	1,431

SOURCE: FAO. To these figures some 624 million hectares of scrub area should be added in tropical regions

II

BROADLEAVED CLOSED FORESTS REPRESENT 50 PER CENT OF TOTAL TROPICAL FORESTS AND 28.5 PER CENT OF TOTAL WORLD FORESTS*

Area (M ha)	Closed broadleaf	Coniferous forest	Open forest	Fallow open	Fallow closed
Latin America	654	25	217	62	109
Africa	214	1	486	104	62
Asia/Pacific	292	8	31	4	69
TOTAL	1,160	34	734	170	240

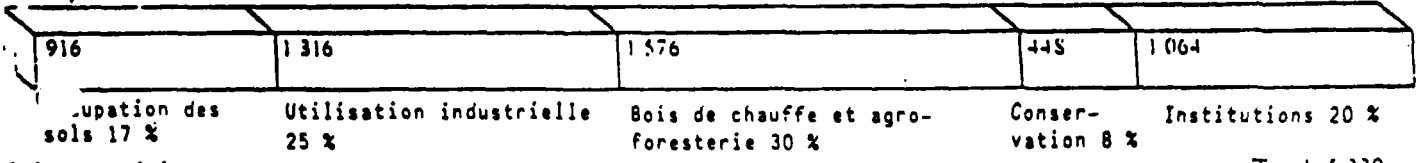
SOURCE: FAO

*not including shrub formations

Estimation du coût du plan d'action sur la forêt tropicale, 1987-1991 (*)
(en millions d'USD)

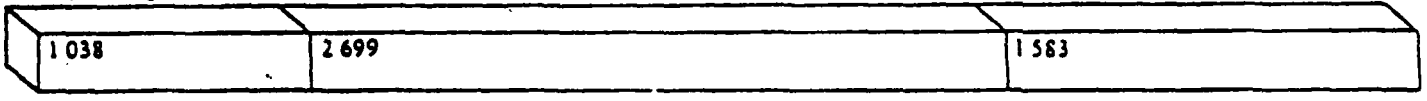
Coût par activité

Total 5 320



Coût par région

Total 5 320



Résumé des coûts

ACTIVITE	REGION Afrique	Asie	Amérique latine	Total quinquennal
Occupation des sols dans les bassins hydrographiques de montagne	139	632	93	916
Gestion forestière à des fins industrielles	167	565	584	1 316
Bois de chauffe et agro-foresterie	439	747	390	1 576
Conservation des écosystèmes forestiers	105	148	195	448
Renforcement des institutions	188	557	319	1 064
TOTAL	1 038	2 699	1 583	5 320

La FAO mène actuellement une étude exhaustive sur les besoins d'investissement et d'assistance technique pour le développement forestier dans les pays en voie de développement, y compris l'investissement dans les installations industrielles. Cette étude va probablement aboutir à une révision des estimations ci-dessus.

(*) "Tropical Forests : A Call for Action", World Resources Institute, Washington D.C., 1985.