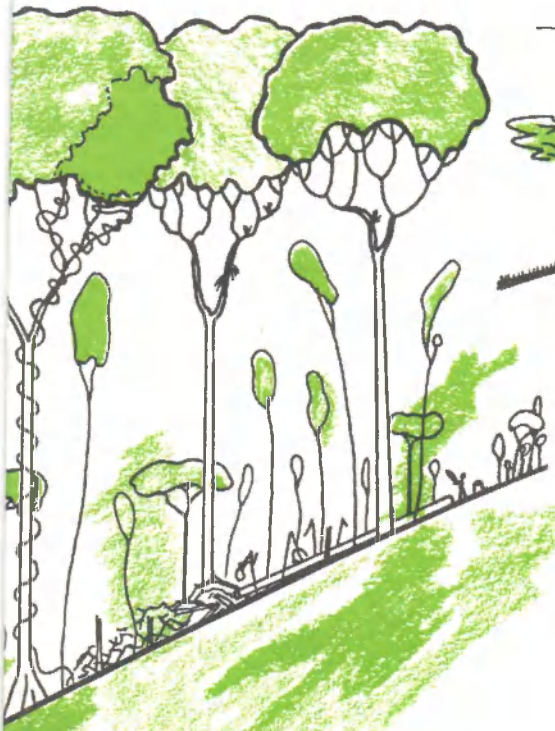

BOS

NIEUWSLETTER

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The BOS NiEuWSLETTER

The BOS NiEuWSLETTER is a bulletin of the Organization for International Forestry Cooperation (Organisatie voor Internationale Bosbouwsamenwerking).

You are invited to send information on subjects related to tropical forestry. Announcements of meetings and symposia, book reviews, comments on articles in the NiEuWSLETTER, and (short) articles are most welcome.

Copy can be delivered in English, preferably on floppy-disk in WP 5.1 or 6.0. Articles should not exceed 2500 words and must include at least two illustrations and/or photos.

The editor is entitled to make changes. As regards content this will only be done after consulting the author. The final responsibility for the article lies with the author. (Partial) Reproduction is permitted, provided that all source material is referenced.

Objectives of BOS

* Promote and improve the quality of the work and cooperation of Dutch tropical foresters in developing countries,
* Exchange information between tropical foresters, (Dutch) institutes on forestry development in the tropics, and other parties concerned,
* Increase public awareness of the importance of tropical forests and forestry in the tropics.

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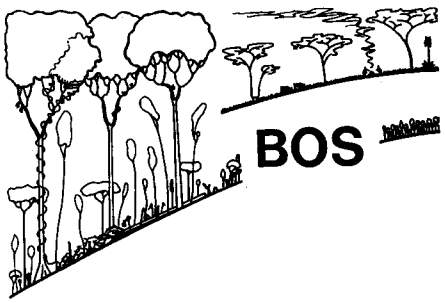
* Compile and publish the BOS NiEuWSLETTER in which all types of information on tropical forestry are incorporated,
* Publish the BOS-Documents, a series of desk-studies on various subjects,
* Acquisition and execution of studies and projects, provided that these fit within the objectives of the BOS Foundation,
* Establish and maintain a register of tropical foresters, called BODIS,
* Maintain contacts with all kinds of (inter) national organizations,
* Keep up a question-answer service for people and organizations on any kind of aspect of tropical forests and tropical forestry.

Contents.



Editorial.

More and more sustainability is becoming the global concept for the conservation, management, and use for the world's forests. Even though this issue is a regular one, one could see it as a theme-issue on the wise use of forests. In all articles this message can be detected, be it implicit or explicit.

The first article deals with Western Samoa; giving an introduction on the island's history, culture, natural vegetation, and (traditional) forestry practices. The author also submits the idea to dedicate a theme-issue on "small islands forestry".
The second article gives insight in the role of forests in climate changes. On one side they are the victims, on the other side they might act as a remedy for the very same problem.
The moabi tree in Cameroon serves as source for two important economic products: karité oil and timber. The articles describes the importance of this tree species for the population and the timber industry, and calls for harmonization and improvement of two seemingly conflicting ways of exploitation.
In a new column I present you a state-of-the-art on sustainable forest management, sustainably produced timber, and certification. This first article gives insight in recent Dutch governmental activities in this field.
The next article deals with the role indigenous peoples can play in the sustainable management of natural vegetation. Untill now this role is in most cases denied; unjust as the author argues.
In "Tales of a shaman's apprentice" Mark Plotkin gives you the opportunity to keep abreast with ethnobotany in a highly readeble and taking narrative way.
In opinion the timber certification and its role for sustainability is reviewed, calling for a positive and individual involvement in the quest for sustainability.

Forests and Forestry in Western Samoa.
An Introduction.

Michiel Meijer

Keywords: Western Samoa, culture, history, forests, forestry.

Introduction

When thinking of tropical forestry our minds easily dwell off to Latin America, Africa, and South East Asia. However, there is another part of the world where tropical forests grow: the Pacific Ocean Islands. The big islands of Melanesia, but also the smaller islands of Micronesia and Polynesia (especially the high ones) are often covered by lush tropical forests. Western Samoa, a small independent country located somewhere halfway between New Zealand and Hawaii, is a good example of this. Let us have a closer look at this country, its people, and its forests.

Western Samoa and its culture

Western Samoa comprises two main islands, Upolu (with an area of 1,115 km^2) and Savaii (1,700 km^2), apart from several smaller ones. The country lies between 13°25' and 14°05' south and 171°23' and 172°48' west. It has little over 160,000 inhabitants, almost entirely of Polynesian origin. Apia, the capital and only city, with an odd 30,000 inhabitants, is located on Upolu, where most of the population lives. Samoa has over 300 villages, almost exclusively located on its coasts.

After being colonised by the Germans in the late 19th century, and being administrated by New Zealand after world war I, the country became independent in 1962.

Tradition is still very important in the life of the Samoans, and society is based on the traditional matai system. The matai is the chief of the aiga or extended family, and the matai gather in the fono or village council, where all village level

Small Samoan settlement. ©Michiel Meijer, 1994.

decisions are made. Even the 49 member national parliament in Apia is made up exclusively of matai, with exception of two seats for Samoans of (partly) European descent.

The way of life, fa'a Samoa or the Samoan way, is based on custom. The influence of the central government in the villages is limited; for any government activity (including the installation of electricity or road building) the approval of the fono is needed. The land is for 81% under customary ownership, 16% belongs to the government (including the old German plantations which are brought together in government controlled Western Samoa Trust Estate Company), and only 3% is privately owned.

The economic unit in Samoan culture is the extended family, and traditionally any production surplus was to be shared. Even today this is still an important aspect of Samoan culture. As a consequence enterprise is all but encouraged and many Samoans feel reluctant towards regular and prolonged labour (Fox and Cumberland, 1962). In 1991 the primary sector still accounted for about 50% of the GNP, 60%t of the work force, and 80 % of export earnings. Subsistence agriculture still has an important role in the local economy. Other important factors are foreign aid and remittances from overseas workers (Taule'alo, 1993).

The natural environment

The Samoan archipelago is of relatively young volcanic origin; many volcanic eruptions are known in historic times. The last one took place in 1911 on the island of Savaii. The landscape is mountainous and large areas are characterised by very deep valleys surrounded by steep slopes. The highest point is Mount Silisili on Savaii with a height of 1,800 metres.

Due to the rugged landscape climate varies a lot in Samoa. Rainfall can be as low as 2,500 mm on the northwest coasts of the main islands, with a dry and a rainy season, but it might be as high as 7,000 mm high in the mountains of Savaii without any dry period. Temperatures differ from around 26.5 °C at the coast to less than 22° C in the highlands. Average temperatures however are almost constant throughout the year.

The volcanic material in Samoa has a very porous structure through which, in spite of the high rainfall, only a hand full of perennial rivers exists. Ground water is only found at great depth, but at the coastline the phreatic lens hits the surface and forms sweet water springs. Soils on the younger lava flows are still very shallow and the 1911 lava flows are basically still without any vegetation.

Western Samoa lies in the cyclone zone. From November to April -the wet season- cyclones can occur.

The vegetation

Due to the topography many different types of vegetation can be found in Samoa. Apart from various disturbed vegetation types, Taule'alo (1993) mentions: coastal- and montane marsh, mangrove scrub and -forest, swamp forest, coastal-, lowland-, ridge-, montane-, and cloud forest, as well as two vegetation types on lava flows.

Samoan landscape. Most of the plateau-vegetation was destroyed by the cyclones Ofa and Val. ©Michiel Meijer, 1994.

Obviously this great variety of ecosystems implies a tremendous biodiversity. The native flora of Western Samoa comprises nearly 500 species, of which native ferns comprise almost 200 species. The isolated position made it possible for many unique species to evolve. As a result 32% of the native Samoan plants are endemic (Taule'alo, 1993). Since each of the specific ecosystems in Samoa has only a limited area, and many plant species are confined to only one or a few ecosystems, this biodiversity, with its high degree of endemism, is extremely vulnerable.

These ecosystems are also home to a fauna that includes several endemic species, among which 10 of the 35 land bird species. The only mammals of natural Samoan origin are flying foxes and bats. The first Polynesian settlers introduced domestic animals and rats and mice.

Traditional forest use

The forest has always provided the Samoans with many different products. First of all it was a source of fire wood and timber. Timber was necessary for construction of the fale (traditional open house), canoes, ceremonial- and household objects, as well as arms. Besides, many plants in the forest have medicinal properties and were and are still being used by the people.

Other important products were bark and leaves. When cotton was not yet known to the Samoans, they made their clothing from these products. Perhaps because there are no large animals in Samoa, hunting has never been important, but some hunting, e.g. for flying fox or pigeons, occurred.

The forest use by the population has never been excessive. People just took what they needed, and nothing more. In fact, most people only entered the edge of the forest and never penetrated very deep. They were certainly afraid to spend a night out in the forest, because it was believed that it was the place where the aitu (ancestral spirits) lived.

Forest was cleared in order to plant crops. Since the land ownership was part of a matai title, the matai had to decide on this. In general no more forest would be cleared than necessary. Since the villages were located on the coast, except in times of frequent wars e.g. with the Tongans in pre-European times, clearing took place in the coastal zone, a scheme that to some extend still characterises today's situation although the agricultural frontier is slowly moving upwards.

Colonial times

When the Germans colonised the country they were basically interested in the production of agricultural crops. They established large copra plantations and also coffee, cocoa, tobacco, cotton, bananas, and other crops were planted. After New Zealand took over during world war I little of this changed. Timber production was only for the local demand. Because the forests were so unproductive by the end of the fifties most of the timber for the wooden buildings in Apia was imported from the United States. This implied a considerable drain of financial resources. Another constraint was the shortage of wood to make banana cases. However, along with development saw milling activities increased and with the independence in 1962 two saw mills were operating in Apia.

Hardly any plantations for timber production were established in colonial times, although the Germans introduced several species: teak (*Tectona grandis*), the banyan (*Ficus spp.*), *Albizzia spp.*, and Norfolk pine (*Araucaria excelsa*). These were mainly planted as wind breaks or for shade. Only teak was also planted for timber on a small scale. In the fifties small trials with exotic species were established at Vailima village.

An aspect of development that might have induced some deforestation has been the modification of the traditional land ownership. This development has probably been going on since the 20's or 30's, but has first been recognised by Crocombe (1987). Not only is it possible to obtain power over land by getting a matai title, but also clearing of natural forest can provide rights on land. This land, in contrast with traditional agricultural lands which are transferred only together with the matai title, can be inherited by the children of the person that first cleared it. It is almost certain that this fact, during certain periods, has led to deforestation.

As a consequence of contact with the western world many exotic plant species were introduced, some of which did extremely well in Samoa. Good examples are *Albizzia spp.* and the vine *Mikania micrantha* (also called mile-a-minute because of its fast and vigorous growth), which in many parts now dominate the local flora.

Independence

In the early 1970's the Forestry Division of the Department of Agriculture, Forests, and Fisheries started more seriously with the establishment of commercial timber plantations. Species planted included *Tectona grandis, Swietenia macrophylla, Toona spp., Cedrela odorata, Eucalypt spp.* and Poumuli (a local species, very popular for fale posts). In the beginning of the 1990's the total area under forest plantation was well over 2,000 ha. The principal way of planting is line planting in low quality natural forest. Most used spacing is 10 x 2 metres. At a later stage considerable thinning takes place. The average final number of stems per ha is about 200. The areas planted are on government land, but also on leased customary land. The Forestry Division also established a research section; to establish species trials and develop management systems. At times this section performed well and many trials were established, but by the end of the 1980's the situation had reached an almost complete stand still.

The growing need for foreign currency has certainly affected the situation of the Samoan forests. Gradually logging activities increased, and several saw mills were established. The logging activities were not accompanied by any serious management

plans and the resources were depleted at great speed. Also the establishment of cattle farms imposed a threat to the forest areas.

Although trees continued to dominate the Samoan landscape, the supply of fuel wood increasingly became a problem in Apia and the coastal villages without an own forest area. This resulted in exorbitant prices at the market in Apia. In this period it has been tried to establish a social forestry programme for villagers to grow their own fuel and construction wood. Initially it seemed to be a success since participation was high. Unfortunately, when free distribution of seedlings was stopped and villagers were asked to take care of the nurseries themselves, the programme suffered a quick death. It is believed that this failure was mainly due to cultural aspects. Traditional society does not encourage any new enterprises. So, unless the pressure is extremely high new enterprises are likely to fail because of lack of motivation.

However, positive experiences with local villages are also known. Falealupo village, on Savaii, had an area of valuable, practically undisturbed rain forest. The villagers were talking with a logging company for its exploitation. A Swedish NGO heard about this and went to the village to talk to the fono (village council). The village needed money for a new school building for which they needed money and therefore wanted to exploit the forest. The village and the NGO came to the agreement that a logging ban of 50 years would be established and the NGO would provide a new school building. This way the village would have its school and could still use its forest to gather minor products. The forest could even be visited for a small fee.

Recent times

In 1990 and 1991 the country was struck by two exceptionally strong cyclones, Ofa and Val, which left destruction everywhere. The impact on the economy and the natural resources was tremendous. The country that had been practically self-sufficient became a timber importer again. Even voices were heard in government circles that forestry should be scrapped from the list of economic activities and the government should no longer be involved in it.

Huge areas of natural forest were literally blown away, implying a dramatic change in appearance of the landscape. After the uncontrolled logging the cyclones diminished even more the area of merchantable indigenous forest. Of the total forest area of over 100,000 ha only about 13,000 ha is still considered to be merchantable (Tang, 1992). Salvage logging operations, in order to rescue blown over logs, have been discussed many times. Any concrete actions however have not yet been undertaken. The last proposal (from 1994) was by a New Zealand - Australian group that wanted to apply

helicopter logging. Since the areas are covered by weeds (mile-a-minute), the logs will be hard to find. Therefore, the proposal did not seem viable. Some suspect that the group had an eye on the remaining standing sites as well, to make the operation lucrative.

Most of the timber plantations did not survive the cyclones either. Extensive damage occurred in 93% of the plantations. Of the plantations 45% was considered a complete write-off, while 49% was considered salvageable by means of refilling operations. Remaining commercial plantations today accrue almost 2,000 ha, mainly of young mahogany.

The forest and nature resources of Samoa are not only affected by natural disasters. Also development activities take their toll. Recently one of the two important upland swamp areas, at Afulilo, was inundated for the construction of a hydro-power plant. Conservationists called the project disastrous because it destroyed a fragile and rare ecosystem. However, economically the project was tremendously important because the plant eventually should produce more than half of the country's electricity, thus reducing the high fuel bills that the country faces every month.

Logging operations; one of the threats to Samoa's forests. ©Michiel Meijer, 1994.

An adjacent area with similar characteristics is still under threat by expansion plans of the power plant. If this will happen most of the Samoan upland swamps will have disappeared.

Also cattle farm development implies a reduction in forest area. Samoan upper class has claimed large areas for this purpose, partly in the upland areas where forest has been converted into grass land.

Whereas in the 1950's, apart from the coastal zone, both islands were mainly covered by forests, Upolu and Savaii had a remaining forest cover of 23% and 47% respectively by 1992. This means 37% for the country as a whole.

Nevertheless, initiatives are being taken to improve the situation. The Watershed Management Section of the Forestry Division is establishing 800 ha of rehabilitation plantations in the heavily damaged upland forest areas in the country's principal watersheds. This is thought necessary because natural regeneration is severely hindered by the exotic mile-a-minute vine which covers and suppresses everything. The same Watershed Management Section is promoting agroforestry in the watershed areas in order to make agriculture more sedentary and take the agricultural pressure off the remaining forests.

The Department of Lands Surveys and Environment, assisted by the South Pacific Regional Environment, has recently started a project with the people of Sa'anapu village in order to protect and conserve one of the last remaining areas of high mangrove forest in the country. This is tried by showing the people ways to make money out of the mangrove without cutting the trees. Activities include eco-tourism and the production of handicrafts.

Epilogue

Although this article is far from complete, it might have given the reader some idea of the specific role of forests in a small island country like Western Samoa. There are many more small island countries in the world, with their own peculiarities, that would be worth looking at. Perhaps this would be a good idea for future contributions to the BOS NiEuWSLETTER*.

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Michiel Meijer graduated at the Department of Forestry of the Wageningen Agricultural University in 1988. He worked for the FAO in Brazil in the integrated forestry development project for North-East Brazil from September 1990 till September 1992. From October 1992 till September 1994 he worked in a watershed management project in Western Samoa.

* Note from the editor.
In dialogue with the author it was decided to compile a theme-number on Island Forestry in the coming year. If you are interested in cooperating on this subject let us know.

Climate Change: Global Forests as Victim and Remedy.

G.J. Nabuurs

Keywords: climate change, carbon cycle, sequestration.

Introduction

The earth's climate is largely determined by naturally occurring greenhouse gases present in the atmosphere. Most of the short wavelength radiation in sunlight passes through these gases and warms the earth's surface. Long-wave radiation is then emitted by the earth and heats the atmosphere. Part of this long-wave radiation is re-emitted to the earth because of greenhouse gases present in the atmosphere. Most important greenhouse gases (GHG) are water vapour (H_2O), carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Due to human activities, the concentrations of most of these GHG's are rising and it is expected that this will have a major impact on the earth's climate and as such on mankind (Houghton et al., 1990). This article describes what the effects of climate change on the global forests can be and how forests can contribute to the solution of this problem. The article concentrates on the role of carbon dioxide because it is the most important man-made GHG and because forests are a driving component of the global carbon cycle.

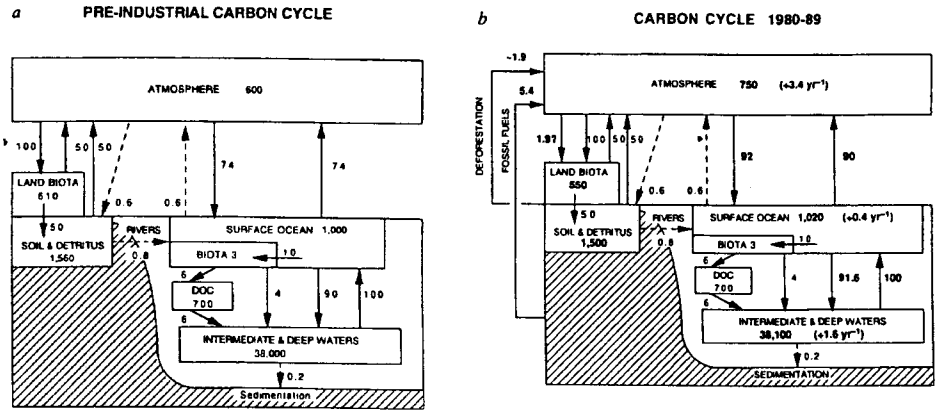
State-of-the-art in climate change research

It is almost 4 decades now, since Roger Revelle and Hans Suess (1957) drew scientific attention to a global-scale experiment in which mankind is returning organic carbon stored in fossil fuels to the atmosphere. Since then, research in the field of global climate change has focussed on a number of topics, e.g: 1. prediction of the rate and magnitude of climate change on varying scales; 2. prediction of effects of climate change on various parts of society, environment and biosphere, assuming certain rates and magnitudes of climate change, and 3. assessment of the global carbon cycle with as a sub-topic the role of forests in the global carbon cycle.

It is certain that the concentrations of various GHG's in the atmosphere are rising. The concentration of carbon dioxide has risen from a pre-industrial level of approximately 280 ppm to 354 ppm at present. This concentration is expected to have doubled by the year 2080. Figure 1 shows how the global carbon cycle has been perturbed by the activities of man. In comparison to the pre-industrial situation, burning of fossil fuels and deforestation is causing a flux to the atmosphere of 7.3 Gt C yr^{-1} (1 Gt C = 10^{15} g C). The increase in carbon dioxide concentration in the

atmosphere and in the oceans accounts for only 5.4 Gt C yr^{-1}. This leaves a gap of approximately 2 Gt C yr^{-1} (the so-called missing sink). For a long time it has been debated where this missing carbon 'is hiding'. It is now commonly believed that the land biota and especially forests, are acting as a net carbon sink.

Figure 1: **Global carbon cycle reservoirs and fluxes, in Gt C and Gt C yr^{-1}, respectively (1 Gt C=10^{15} g C)** (Siegenthaler and Sarmiento, 1993).



The increase in the concentration of most of the GHG's is likely to have an impact on the earth's climate. Most studies regarding this problem have used General Circulation Models (GCM's) to predict climate under a doubled atmospheric CO_2 concentration. Their predictions vary widely, but can be summarized to approximately 0.5 °C temperature increase at tropical latitudes to over 4 °C temperature increase at boreal latitudes. Precipitation is expected to increase by 7 to 15%. However, mid-latitude continental regions may face severe drought periods. The anticipated sea level rise remains uncertain and predictions vary between 0.2 m and 2.0 m. The Intergovernmental Panel on Climatic Change (IPCC, Houghton et al., 1990) gave a best estimate of less than 0.5 m. Furthermore, it has been predicted that (tropical) storms may increase in frequency and intensity.

Effects of climate change on global forests

Potential effects of climate change on forests are expected at all scales, from the individual tree to large forest biomes. The individual tree may respond with an increased water use efficiency because at higher CO_2 concentrations the stomata can

close a little. The higher CO_2 concentrations may also lead to increased growth. Fire damage is expected to be more severe, especially in semi-arid tropics and the Mediterranean, areas becoming drier and warmer. Increased tree mortality is likely from insect and fungi responses to raised temperatures and moisture.

At a larger scale, forests of the northern hemisphere are expected to shift northwards 200-1,000 km, resulting in drastic tree species composition changes at a site (Prentice et al., 1991). Northern ranges will shift northward, but it is unlikely that tree species can keep pace owing to problems with seed dispersal. When the southern ranges of tree species start to shift northward, large scale dieback may occur.

Boreal forests may respond favourably to increased temperature and moisture by enhancement of and biomass accumulation. In fact, enhanced growth and accumulating standing stocks have already been reported for many countries in the temperate and boreal latitudes (Kauppi et al., 1992). However, the higher temperature will lead to increased decomposition of soil organic matter resulting in extra emissions of carbon dioxide to the atmosphere. It is possible that as such, the warming may accelerate the warming.

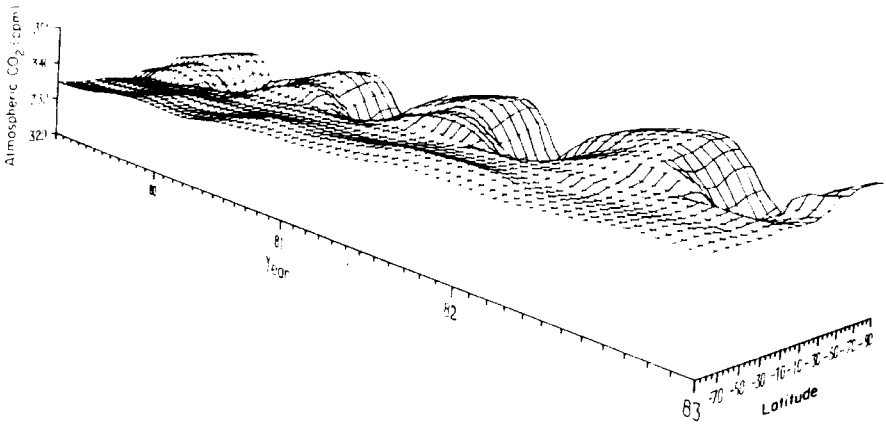
The effects on tropical forests may be small, but are actually little studied and uncertain. Some expansion of tropical forests is expected, largely as a result of increases in precipitation on marginal sites.

Role of global forests as a carbon sink

So far, it was shown that the global forests will be affected by climate change, but that they also play an important role in the global carbon cycle. Long-term monitoring of the atmospheric carbon dioxide concentration showed a strong seasonal fluctuation at the northern hemispheric temperate and boreal latitudes (see Figure 2). These are the areas with large forest belts. This indicated that the forests of the temperate and boreal zones have a big influence on the atmospheric carbon dioxide concentration and could be acting as a net carbon sink. This is supported by several studies that report an enhanced growth and accumulating standing stocks for forests of temperate and boreal latitudes (e.g. Kauppi et al., 1992; Armentano and Ralston, 1980).

This has led to a large number of studies regarding the precise role of the global forests and regarding the potential of carbon storage in forests in order to mitigate the atmospheric increase. E.g. Apps and Kurz (1991) reported that Canada's forests and wood products acted as a significant carbon sink in 1986. Kolchugina and Vinson (1993) reported that the Russian forests are acting as a carbon sink of approximately

Figure 2: **Annual cycling of atmospheric CO_2 and its dependence on latitude.** The strong seasonality on the northern hemisphere is due to the large amount of terrestrial vegetation there (Goudriaan, 1987).



0.5 Gt C yr^{-1}. Present knowledge on the role of the terrestrial biosphere is given in Table 1. Above all, it shows how large the uncertainties remain for the tropical forests. The net sink function of boreal and temperate forests as appears from Table 1, has only recently been widely acknowledged.

The role of tropical forests remains uncertain. Land-use change is commonly regarded as the main factor causing these forests to be a net source of carbon to the atmosphere (Houghton, 1991). However, different views on tropical forests exist and reliable data are scarce. When the regrowth of secondary forests is taken into account and a small net accumulation assumed for the primary forests, the tropical forest biome could also be acting as a net sink of carbon (Lugo and Brown, 1992). Tropical plantations are probably contributing to this with a net sink in the order of 0.03 to 0.11 Gt C yr^{-1} (Brown et al., 1985).

Another problem with the tropical forest biome, is the scarcity of reliable and representative data. For a long time, modellers have worked with relatively few biomass data that were gathered by ecologists decades ago, and with other aims. Those ecologists wanted to sample the real tropical forest, with the giants strongly appealing to their imagination. Using those data led to an overestimation of carbon dioxide emissions resulting from burning of tropical forests. Estimates of those

emissions are becoming smaller because of lower estimates of the average standing biomass in the tropical forest based on representative forest inventories (Gillespie et al., 1992).

Table 1: **Current C fluxes in the terrestrial biosphere.**
Sink =(+); source =(-) (Sampson et al., 1993).

Global Biotic system	Current C flux (Gt C yr^{-1})
Tundra/Boreal forests	+0.5 to + 0.7
Temperate forests	+0.2 to + 0.5
Tropical forests	-2.2 to -1.2
Grasslands, Savannas and Deserts	0.0 to +0.6
Agro-ecosystems	-0.1 to +0.1
Wetlands	+0.2
Total	-1.4 to +0.9

The viewpoints described above led to the idea that it should be possible to mitigate the atmospheric carbon dioxide increase by establishing new afforestations. Many studies have been carried out to calculate the effects of such new afforestations (e.g. Dixon et al., 1991, Nabuurs and Mohren, 1993), and several organizations were founded to establish those forests. An example is the Foundation Face (Forests Absorbing Carbondioxyde Emissions) in the Netherlands. The aim of Face is to compensate for the emissions of carbon dioxide from one coal fired power generating station by planting forests. Face now has projects in the Netherlands, Czech Republic, Uganda, Ecuador, and Malaysia.

However, opinions remain divided on whether those new afforestations will play a significant role. E.g Jarvis (1989) estimated that in order to accumulate 1 Gt C each year (almost 20% of the annual emission due to burning of fossil fuels), an area of 370 million hectares would be needed. With a joint effort, it should be possible to find this area that is technically suitable and socio-economically available.

Research and policy in the near future

Scientifically, the attention is moving towards the future carbon balance of forest ecosystems under climate change. Will the warming accelerate the warming or dampen it? Furthermore, the focus is also on the connection between society in developing countries and the processes affecting tropical forests.
Politically, the concept of 'Joint Implementation' is in discussion. At the UNCED summit in Rio de Janeiro in 1992, the Climate Convention was adopted. Countries are given the opportunity to cooperate when trying to achieve the reduction in CO_2 emission which they promised by signing this Convention. Concrete: Joint Implementation means that western countries are allowed to invest, from a viewpoint of cost effectiveness, in projects aiming at a reduction in CO_2-emission in other countries and consider the results as their contribution to the Climate Convention. The other country, usually a developing country, will also benefit in terms of jobs, soil protection, and e.g. fire wood supply in the long-term. However, this is still in discussion, because it is sometimes seen as some kind of neo-colonialism and as a form of shifting western problems to developing countries.

It is surprising and at the same time hopeful, to see how fast all kinds of initiatives, both at the political and at the private company level, arise. With a joint effort that neglects earlier biases against one another, the role of global forests can be strengthened.

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Exploitation of Moabi in the Humid Dense Forests of Cameroon.

Harmonization and improvement of two conflicting ways of exploitation of the same forest resource.

Jochem Schneemann

Keywords: Moabi, Baillonella toxisperma, karité oil production, timber production, Cameroon.

Abstract

This article describes how the moabi-tree (Baillonella toxisperma) is used by the population in East-Cameroon and how the wood is exploited by logging companies. The interests of the population and the logging companies are evaluated.

For many generations the edible oil ('huile de karité') is an important non-timber forest product (NTFP) for the population, besides the kernels of the bush mango (Irvingia gabonensis), bush meat and many other NTFP. They consume the edible oil and sell the surplus. On the other hand moabi is logged because its timber has a good market, especially in Southern Europe. Therefore the tree has already become rare in many parts of Cameroon (South, South-West, Littoral, and Central provinces) and as a consequence the edible oil too. The two ways of exploitation are thus competing for the same natural resource. This has resulted in conflicts between the logging companies and the local communities, most often defending 'their' moabi trees in vain.

Based on quantitative data a comparison is made between the economic value of the timber and that of the edible oil which is extracted from the seeds. It is argued that moabi, if exploitation is continuing in the same way, probably will disappear in a large part of its original area of distribution. Causes are the vulnerable regeneration of the species and the exploitation without (sufficient) restrictions. It is discussed that a sustainable use of moabi is possible, safeguarding and strengthening both the oil and timber interests. Finally some measures are suggested which could enhance a more sustainable way of exploitation of moabi.

Introduction

This article is based on the report "Etude sur l'utilisation de l'arbre moabi dans l'Est-Cameroun" (Schneemann, 1994). The report has been written within the framework of the development project for socio-economic integration of Baka-pygmies in East-Cameroon by the Netherlands Development Organisation (SNV). The objective of the report was to gather information about the use of moabi in East-Cameroon and about the interests of the users (local population and logging companies).

While searching for potential income-generating activities, it was observed that there is little information available on the use and value of several wild fruit trees in Cameroon. Moabi, a huge tree of the dense humid tropical forest, is appreciated by

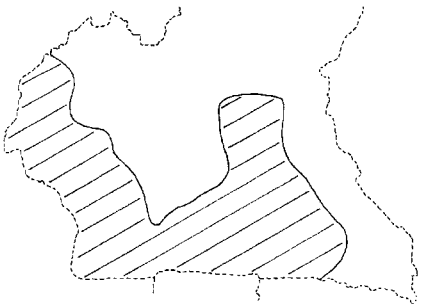
the population for its edible oil, but is also appreciated by logging companies for its valuable timber. The edible oil, extracted from the seeds, is in great demand on Cameroonian markets and makes a high price. As a result of logging the tree has become rare in certain regions of Cameroon and the availability of the oil for consumption and for sale has therefore decreased.

The report is principally based on experiences and data obtained during the period 1990 - 1994 in the subdistrict of Mbang. Several research methods have been applied: participative observation, semi-structured interviews (with Baka and Bantou local population, civil service and authorities, logging companies, and NGO's), inventories of extraction and sale of moabi-oil, etc. Prices regard the situation before the devaluation of franc cfa (Fcfa) in January 1994 but are converted to today's US$ rate.

Characteristics

Moabi, scientifically called *Baillonella toxisperma*, is a species of the family Sapotaceae. People in South and East Cameroon call it "karité", not to be confused with the shea butter tree (savannah karité = *Vitellaria paradoxa*). Moabi is one of the biggest trees of the forest. It may reach a height of 60 m and a diameter up to 5 metre. It has a majestic crown and has a fruit of 6 to 8 cm diameter, light green to greyish, with yellow, strong smelling pulp. Each fruit contains 1 -3 hard shelled seeds, in which the oil bearing kernels are found. The wood is hard and brown-rose coloured.

Figure 1: **Distribution of moabi in Cameroon** (after Vivien and Faure, 1985).



Moabi is found in most parts of the humid dense forest of Cameroon. In the subdistrict of Mbang the tree is abundantly present in one of the four 'cantons', being the one with the most dense forest vegetation. Besides Cameroon, moabi is present in Gabon, Nigeria, and to a lesser extent in Congo, Angola, and Equatorial Guinee.

The number of moabi trees is fairly low and varies from place to place between 0,01 and 0,08 stems per hectare with a diameter superior to 60 cm. There is very little information in the literature about the ecological requirements of moabi nor

about its ecological niche in the ecosystem. According to its limited distribution in only the most dense parts of the forests, I suppose that moabi needs specific conditions related to the density of the forest, such as soil, rainfall and humidity.

Based on observations of 12 planted trees on known dates I estimated the annual mean growth rate (stem diameter at breast height) at 0,7 cm (between 0,4 and 1,0 cm). Observations of the same trees show that moabi may begin to flower at the age between 50 and 70 years. At this "young" age however the production of fruits is little and irregular and an abundant fruit-production may start between 90 - 100 years. Flowering and fructification seems to follow a cycle of one or two productions every three years. Once every three years production is abundant. The production of fruits in the subdistrict of Mbang (and generally in East-Cameroon) between 1989 and 1994 is given in table 1.

Table 1: Moabi fruit production in Mbang between 1989 and 1994.

Year	1989	1990	1991	1992	1993	1994
Production	+	+/-	-	+	-	-

+: high, +/-: moderate, -: no or little production.

Elephants play an important role in disseminating the seeds by eating the fruits and leaving the entire seeds elsewhere in their excrements. Other animals such as wild pigs and porcupines eat the seeds, thus decreasing reproduction, while the gorilla only eats the pulp of the fruit. Man affects reproduction potential by gathering seeds for oil extraction and by logging trees for timber. These effects, however, are difficult to quantify. It is known that local people have succeeded to plant moabi, especially in their cocoa-plantations. Technical information about artificial multiplication is practically absent.

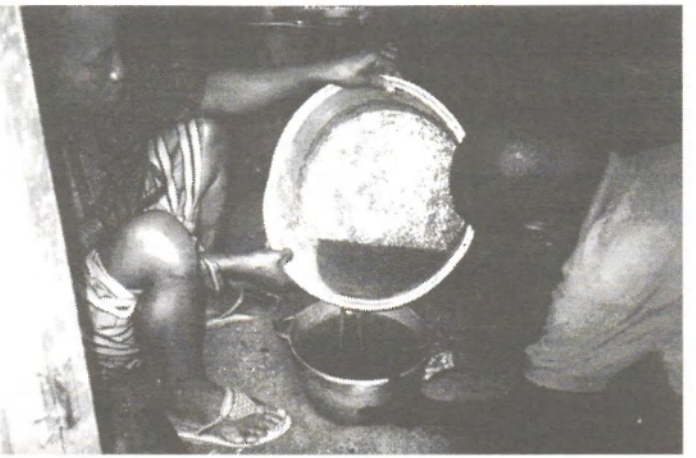
It may be concluded that regeneration of moabi is vulnerable, due to its slow growth, high age of first reproduction, the periodicity of fructification, predation by animals, and gathering and logging by man.

Uses by local people

The study covers principally the subdistrict of Mbang, which has a surface of 4,272 km^2 and about 21,000 inhabitants (1987) belonging to five ethnic groups: the Baka pygmies and 4 groups of Bantu. The moabi is found only in one Bantu canton

('Mézimé') with a surface of 1,130 km^2 and about 10,300 inhabitants (Bantu and Pygmies) spread over 27 villages.

For many generations the oil of moabi has been the only source of edible oil for the forest dependent communities. As an inhabitant of Mbang stated: "Moabi is a tradition for us. Since our grand-parents, we go to stay in the forest to eat its succulent fruits and to extract its oil." The moabi is used by Baka and Bantu in several ways:



Household karité production in Kosso village, East Cameroon. ©Jochem Schneemann, 1993.

1. They eat the pulp of the fruits;
2. They extract the oil out of the kernels (seeds) of the fruit;
3. They make traditional medicines from the bark; e.g. Baka use a part of the bark to become invisible for elephant hunting.

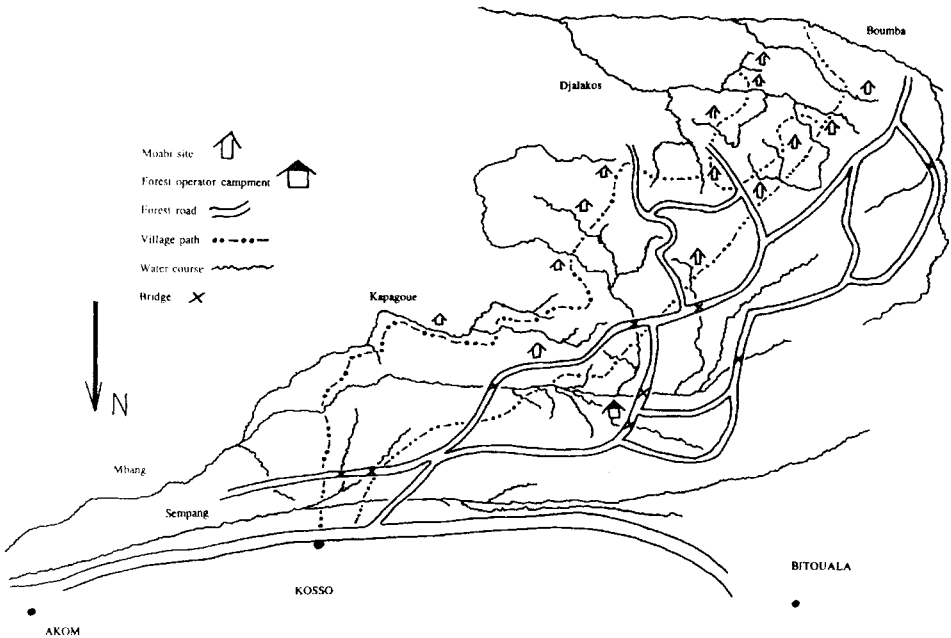
Hereafter I will focus principally on the use of moabi for extraction of the edible oil as this represents a considerable economic value.

The people living in South and East Cameroon have a tradition of communal ownership of land and forest resources. In the case of moabi the man who discovers the tree obtains the right to use it during his life, together with his family. The discoverer consolidates his right by marking the tree and by cleaning the surroundings of the tree. The tree is heritable and becomes a family's property. The obtainment of ownership has taken place many decades ago by the Bantu, who were the first to settle in villages. Nowadays the Baka complain about the fact that the Bantu have 'taken' all the moabi-trees and bush-mango trees (*Irvingia gabonensis*) nearby the villages, and that they (the Baka) have to penetrate far into the forest to collect fruits

and nuts from 'free' trees. Though the preceding concerns customary right, the state is the legal owner of all natural resources, including forest resources.

Based on an inventory of adult moabi trees in seven villages in Mbang, it can be concluded that the competition between uses of moabi for timber and for the oil occurs over an extended area. I have observed that moabi trees are often found in groups of between 5 to 50 trees. All villages gave names to these places, which may extend to 50 km (or two days walk) from the village. This area covers their entire hunting and gathering area. In April 1993 the number of adult trees varied between 12 and 210 from one village to another.

Figure 2: Gathering zone of Kosso village, subdistrict Mbang.



(Design after: Moloumkoze Gooefroy)

The collection of fruits starts in July-August, when Bantu and Baka families may stay between 2 and 8 weeks nearby a moabi place in the forest. The women gather the fruits, take out the seeds, dry them, pound the kernels, extract the oil, and transport it

to the village. The men build the camp and the drying installations and they may help in taking out the seeds and breaking them. Besides they do a lot of hunting in the surroundings of the camp. The oil is pressed by hand or with a wooden press fabricated on the spot. The wooden press takes less time, while the output is nearly the same.

The Bantu do extract far more oil than the Baka pygmies. While the latter consume all of it, the former sell considerable amounts. In productive years extraction of moabi seeds may provide oil for the whole year (Sieffert and Truong, 1992). Women use the oil in many sauces, for example with peanuts, bushmangos, leaves and cucumber seeds. One can also eat the pure oil with boiled cassava or plantain. The oil can be conserved for a period up to one or two years.

Appreciation of moabi by the local population is first shown by the fact that local names for moabi are found in the names of many villages and places in South and East Cameroon. Belinga (1992) found that the people (Bantu and Baka) around Mbang appreciate the moabi as the most important wild fruit tree, because of its oil, followed by the bush-mango. To obtain the moabi seeds they may have to walk up to 50 km through the forest with heavy loads. During the years 1930-1950 many villagers have planted moabi in their cocoa plantation for shade and for their fruits, which is another indication of its value.

Exploitation by logging companies

Logging started around 1900 at the coast of Cameroon and has expanded towards the East province between 1950 and 1960. From 1971/1972 moabi has been exploited in the East province, in particular in the districts Kadey and Haut-Nyong. In order to assure forest regeneration the forestry department has determined a certain 'Minimum Diameter of Exploitation' (D.M.E.) for each timber species. It is forbidden to log moabi trees with a diameter of less than 100 cm; a rule which is however not always respected.

Logging companies qualify moabi trees suitable for logging if they:

1. have a diameter of at least 100 cm,
2. are not situated nearby a ravine, and
3. have a straight and healthy stem.

If moabi trees get a certain sickness (a virus infection) the timber becomes worthless because this results in a hollow stem. In many cases this sickness can not be seen

from the outside, but it can easily be detected by tapping on the trunk, or with the chainsaw. In general loggers start logging without checking the wood quality, thus wasting valuable trees and timber.

It seems that logging has caused a decrease and even disappearance of moabi in regions which are logged since several decades: the Littoral, Central, South, and South-West provinces. Obam (1992) stresses that if this situation prevails Cameroon may loose important irreplaceable forest resources such as moabi. Many others confirm his observations. In East-Cameroon there are still areas with relatively high densities of moabi because no logging has yet taken place. The national forest inventory, phase IV (ONADEF, 1992), shows that, compared to areas not yet exploited, those areas exploited for many years present a significant lower density of moabi, including trees with a dbh $<$ 100 cm. Meanwhile the East province has become the main production centre of moabi in Cameroon. In the Mbang subdistrict an inventory of moabi trees in four villages has shown that up to 1993 logging companies logged about 37% (264 trees) of the initial number of adult trees. The villages show much variation: one village is deprived of 86% of the trees for used fot extraction of oil.

How are local people involved?

Up to 1981 logging companies were obliged to assist local communities by building infrastructure such as classrooms, health centres etc. From 1981 the companies no longer have direct obligations towards the population, as they pay a "communal tax" in Yaoundé, meant to finance local infrastructure building. Now local communities are only informed about the arrival of a logging company, their license etc. They often complain about the small benefits they gain from the exploitation of 'their forest'. Either during information meetings or through letters local communities have often expressed their desire that logging companies would not log the moabi trees they use for oil extraction. Some people have attached boards with their name and village on moabi trees in order to prevent logging. Their manifestations did not yield much success: logging companies and government have not given any guarantee of conserving moabi trees for the local communities. Many local communities have the impression that they have no influence and that they are the losers. In some places however local people have succeeded in defending their moabi trees with bow and arrow. In general local communities do welcome logging companies but they want to have much more benefits from them.

In order to overcome some problems mentioned above I would propose the following measures. The forestry department could protect certain good quality 'mother-trees' in

order to guarantee sufficient regeneration of the species. It is also urgently needed to analyse the existing national forest inventories in order to determine the level of timber extraction which can guarantee sufficient regeneration of moabi (and other species). Moreover the control of the logging practises should be improved considerably in order to prevent illegal logging. Finally it should be mentioned that the new Cameroonian forest legislation of 1994 offers more possibilities for participatory forest management with shared responsibilities.

Socio-economic importance

The timber of moabi is highly appreciated on the international timber market. It is classified as a high value species (group A). It has a specific demand in southern Europe where it is used for carpentry, furniture, veneer, and many other applications. Its economic importance can be evaluated regarding the number of companies, and volumes of production and exportation.

Giant moabi logs on log collection place, East Cameroon. ©Jochem Schneemann, 1993.

In East Cameroon 75% of all companies log moabi. The six most important companies are (in descending order) Pallisco, SEBC, EFC, SCPL, GRUMCAM, and SFID. The total production in Cameroon from 1974 to 1992 varied between 1 and 3% of the total timber production of Cameroon (all species). Since 1989/90 its production has nearly doubled. Most of the moabi production comes from the East, where the mean annual logging rate was 900 trees from 1974 to 1992. For two companies moabi represented a significant part of their total production: for Pallisco 24% and for SEBC 7%. Only a small part of the production is processed in sawmills in East Cameroon. Most of the timber is exported as logs. From 1990 to 1993 moabi represented 2.6 to 3.7% of the total volume of logs (all species) exported by Cameroon. Between 1990 and 1993 moabi logs made an average price of 62,500 Fcfa or US$ 250 per m3 (free on board in Douala).

The value of moabi logs exported ranged between 20 and 34 million French francs, which is 3.4 to 5.0% of the total export value of logs (all species).

To evaluate the economic importance of moabi for the local population I will have a closer look at the oil of moabi for this product is traded. A study initiated by SNV has shown a high and constant demand for moabi oil, despite its high price. The demand easily exceeds the offer. Prices vary from 400 Fcfa (1.6 US$) per litre in far-off production areas (e.g. Lomié) to 2,000 or 3,000 Fcfa (US$ 8 or US$ 12) in Douala and the capital Yaoundé.

An inventory in 1992 and 1993 in the subdistrict Mbang shows that extraction varies between villages and between Baka and Bantu women. In 1992 (year with high fructification) 32% of the Bantu women and 75% of the Baka women have extracted the oil. A Bantu woman in general extracted about four times the quantity a Baka woman extracted. Whereas Baka women exchanged up to 15% and consumed 85% of the oil extracted, Bantu women sold 40% of it. Extrapolation of the inventory results shows that in 1992 Bantu and Baka women in the subdistrict Mbang would have extracted approximately 6,200 litres of oil, with a local value of 4.6 million Fcfa (approximately 18,400 US$). They would have sold 2,100 litres of oil for 1.6 million Fcfa (6,400 US$). The total amount of oil extracted would, on the market of Yaoundé, represent a value of 12.4 million Fcfa (49,600 US$).

Timber and oil: a comparison

Now I will compare the economic benefits of oil extraction with the benefits of tree logging. The comparison is made between a single tree for which 'the manager' has the choice between logging and extraction of oil from the seeds. This choice implicates who will benefit, either the logging companies or the local communities. Not considered are the costs (e.g. labour) for I do not have such data. The estimations are indicative and more data are needed to increase the reliability. The estimations are based on the observations and estimations on growth rate (an average of 0.7 cm/year), first flowering and timber prices as mentioned before. The estimated amount of seeds and oil one tree can generate is based on interviews with women.

The age of a tree which has reached a diameter of 100 cm is estimated at 135-150 years (100 cm/ 0.7 cm a year). If abundant fruit production started at the age of 100 years, the tree has produced oil for about 40 years. With the usually applied "discount factor" the oil revenue is calculated, because oil revenues will also be obtained later than the logging revenue.

For a tree with dbh = 100 cm in year x there are two possible scenarios.

Scenario 1: logging of the tree.
According to the local 'tarif de cubage'[1] (ONADEF, 1992) the tree has a volume of about 7.4 m^3. The timber has an export value (price 'free on board') of (7.4 x 62,500 Fcfa/m^3=) 462,500 Fcfa or ± US$ 1,850. This revenue can be obtained once every 140 years.

Scenario 2: continuing oil extraction.
According to the women that have been interviewed, one adult tree can produce 45 to 55 basins of dry seeds once every three years. One can extract 3 to 5 litres of oil from one basin. A conservative estimation (3 litres from one basin) means that one could extract 135 to 165 litres of oil from one tree every three years. This volume represents a (national) value on the market of Yaoundé of (150 x 2,000 Fcfa=) 300,000 Fcfa or ± US$ 1,200.

The first production after year x will on average take place after 1.5 years, the second after 4.5 years, the third after 7.5 years, etc. The total benefits therefore will amount c.q. US$ 1,200, US$ 2,400 and US$ 3,600. With a discount rate of 10% the value of the oil production after 4.5 years equals 455,000 Fcfa or US$ 1,820 in year x. This is approximately the same value of the timber in year x. After 7.5 years the total revenues already amount 602,00 Fcfa or US$ 2,408 (discounted to year x). It is clear that if a lower discount rate is valid, the oil revenues are worth more than calculated here.

Comparing the two scenarios it can be concluded that after 4.5 years the benefits of oil extraction are almost equal to those of the timber revenue of a tree with a diameter of 100 cm. Moreover, after 7.5 years the discounted oil revenues do largely exceed the timber revenues.

If one waits for example another 30 years the tree will have diameter of 121 cm (30 x 0.7 cm/year). According to the local 'tarif de cubage' a relatively much higher volume can thus be harvested, i.c. 11.5 m^3, representing a value of 718,750 Fcfa (11.5 x 62,500 Fcfa) or US$ 2,875. Furthermore, oil production can be maintained during these 30 years.

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1 Tarif de cubage: this table gives the relation between diameter and volume; it is based on a large number of measured trees.

Conclusions

It is concluded that the oil of moabi is an important non-timber forest product for local communities in East Cameroon; the oil represents a considerable economic value (for consumption and income-generation). The timber also represents a significant value, as it makes a high price on the international market. However, for most logging companies the species covers less than 10% of their total production. Also on national level moabi is of minor importance, covering for 3.4 to 5.0 % of the total export value of logs (all species) between 1990-1993.

Conflicts between logging companies and local communities are manyfold. Local communities have often expressed their alarm about and discontent with the logging of moabi trees. Their suggestion to limit logging in favour of oil extraction has not been accepted by the government and the logging companies. So far local communities are hardly involved in the management of the forest resources. The new forest legislation however at least offers more possibilities for their involvement.

In the present situation the short-term interests of the logging companies and the state are served at the expense of short-term interests of local communities and the long-term interests of all parties involved. If timber exploitation continues in the same way moabi will probably disappear in a large part of its original area of distribution within 10 to 20 years. Drastic timber production decline has already taken place in the Littoral, Central, South, and South-West regions after several decades of logging. Nowadays the East province, where logging started only recently, has become the main production centre of moabi logs.

Causes of the decline of moabi are logging without (sufficient) restrictions and the vulnerable regeneration of the species. Regulations, such as the Minimum Diameter of Exploitation, have not resulted in sufficient regeneration of the species, mainly because of lock of good control mechanisms.

It is estimated that the long-term national economic benefits of oil production exceeds the short-term timber production. However, sustainable use and management of moabi is profitable for all parties involved, thus providing sustainable economic benefits for Cameroon.

Recommendations

Review of the use and management of moabi is urgently needed. It is important to balance exploitation (for oil and timber production) of moabi in such a way that

sufficient regeneration is guaranteed. In order to avoid conflicts between all parties involved the following measures are to be considered:

- conservation of good quality 'mother trees',
- a higher Minimum Diameter of Exploitation,
- restriction of logging trees used by local communities,
- a thorough analysis of the national forest inventories and supplementary research in order to determine the sustainable exploitation levels,
- research on the influence of seed gathering on the regeneration of moabi,
- improved control of logging operations,
- equal involvement of all parties in the development of management plans for particular areas,
- investigation of the possibilities of planting moabi.

Furthermore, the potential of new applications of moabi oil should be studied. Like the shea butter tree, *Vitellaria paradoxa*, oil from the moabi could be exported to Europe for the manufactering of soap and other cosmetics. The French cosmetic industry seems to be interested.

Sustainable use and management of moabi can generate two important economic products. Wise use of this natural resource serves not only local communities, logging companies, and the state. Incorporation of moabi as producer of a non-timber forest product can serve the sustainable use and management and therefore the conservation of Cameroon's tropical forests.

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Sustainable Forest Management, Sustainably Produced Timber, and Certification. A state-of-the-art.

Peter Sips

Worldwide the concern for (tropical) forests is translated into initiatives in the field of sustainable forest management, sustainably produced timber, and certification of both forest management and timber production. This process of wiser use of these natural resources is guided by a wide range of national and international organisations in producing as well as in consuming countries, involving e.g. national authorities, international fora, environmental and fair trade organisations, development organisations, timber trade, and research organisations.

Though sustainable and multifunctional forest use are since long the foundation's leitmotiv, it is found appropriate to serve the global issue of wise use of forest resources with a regular column. A state-of-the-art column, not pretending to cover all developments and without any judgement. However, all information and/or comment are welcomed to cover the issue the best.
In this first article insight is given into recent Dutch governmental activities in the field of sustainable forest management, sustainably produced timber, and certification.

Introduction

In the spring of 1991 The Dutch Government's Policy Paper on Tropical Rainforests was presented to Parliament. The central policy objective adopted is: "To encourage the preservation of the tropical rainforests through balanced and sustainable land and forest use, with a view to halting the current rapid process of deforestation and other environmental damage and degradation."

Concerning the tropical timber trade it was stated that: "The Government will encourage early measures to bring the harvesting of timber into line with sustainable forest management and put a complete halt to timber trade activities in virgin forest. These measures are intended to ensure a long-term future for the production and export of tropical hardwood. The Government will also call for an early prohibition on the harvesting of timber from endangered tree species."

In 1993 the Framework Agreement on Tropical Timber has been signed by the Dutch Government, the timber trade and industry, the labour unions, and environmental organizations expressing the objective that from 1996 onwards use of tropical timber will be limited to timber originating from sustainably managed forests and bearing a

certified hallmark. Certification of tropical timber is intended to be an instrument in order to enhance the Government's decree (part of the Policy Paper on Tropical Rainforests) that from 1995 onwards only sustainably produced tropical timber may be used.

At the end of 1994 in Parliament a review took place with reference to the evaluation of the Policy Paper on Tropical Rainforests of December 1993. Evaluation and debates resulted in several recommendations and policy adjustments. The most important are:

- The hallmark is transformed from obliging to voluntary and innovatory.
- Timber from conversion forests will not be considered as sustainably produced.
- International attention will be broadened to boreal and temperate forests.

Although the 1995-goal appeared not to be attainable and the Dutch Government has now set pace with the internationally accredited ITTO 2000 objective, in the Netherlands many initiatives are in progress to come to a more sustainable management use of tropical forests. In continuation of BOS NiEuWSLETTER no. 29 on sustainability, below an overview is given of recent activities undertaken by the Dutch Government.

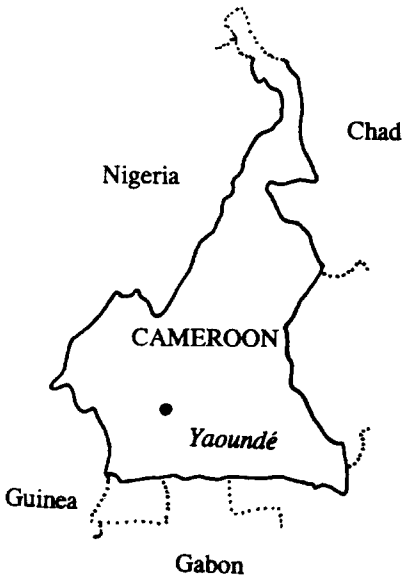
Bilateral cooperation

In accordance with the Policy Paper on Tropical Rainforests, the evaluation, the proposed recommendations, and as outcome of the Framework Agreement on Tropical Timber the Netherlands is involved in bilateral cooperation with its four main suppliers of tropical timber in order to guarantee the import of sustainably produced tropical timber for the Dutch market. The four producing countries are: Cameroon, Gabon, Indonesia, and Malaysia.

In the European Community this approach is only operated by the Netherlands. Canada is the second country involved in such a procedure, in this case with Malaysia. Both countries met on May the 24th in The Hague for informal deliberation on sustainable forest management, sustainable timber production, and timber certification in Canada and the Netherlands itself.

Though the bilateral cooperation with al four countries aims for the same goals, al four processes elapse differently. Below some insight is given for al four counties on the process and the progress made.

Cameroon



Cameroon has a land area of 46.9 million hectares (m ha) of which 22 m ha are forested. Cameroon's vegetation mainly falls within the Guinea-Congolian biogeographical region (56% of the land area), with a high diversity of plants and a high level of species endemism (Sayer et al., 1992). Of this, 4.5 m ha have been classified as unproductive and 17.5 m ha as productive (ITTO, 1993). The three principal commercial species (out of 300 marketable species only 15 are regularly exploited) are: *Triplochiton scleroxylon* (ayous), *Entandrophragma cylindricum* (sapele), and *Lophira alata* (azobé), accounting for almost 60% of the total production.

The total area of forest concessions in Cameroon is 6 m ha, in which about 150 companies are operating. Foreign companies contribute to about 75-80% of the total national timber production. Until recently logging companies were not required to submit management plans, nor to carry out any treatment after completion of logging operations. The new law covers long term concessions, harvesting according to management plans and improved silvicultural techniques as well as the involvement of local people in forest management and plantation establishment (Arentz, 1993). In 1991 and 1992 total roundwood production was about 2.7 million m^3. The export amounted 1.2 million m^3, of which 85-91% was imported by the European Community. The government intends to increase production to 4 million m^3 in 2000 and 5 million m^3 in 2010. In 1992 Cameroon's export to the Netherlands of saw and veneerlogs accounted for 57,000 m^3 (46% of total tropical saw and veneerlogs import of the Netherlands) and for sawn timber 24,000 m^3 (4% of total tropical sawn timber import) (Dielen & Boer, 1993).

Bilateral cooperation

In May 1993 a first Cameroon - the Netherlands orientation mission was organized on management of tropical forests in Cameroon. Cameroon and the Netherlands have formed a Joint Working Group (Groupe de Travail Conjoint) which met in Cameroon

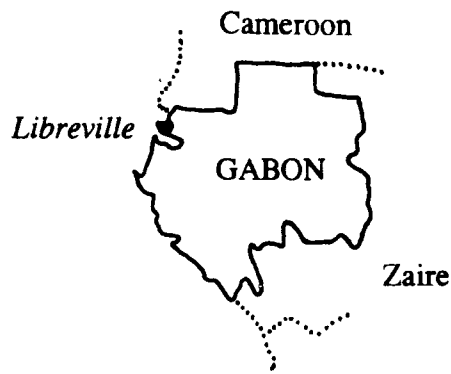
in July 1994. This mission was focussed on the applicability of the ITTO criteria and sustainable management of Cameroon's forests. In April 1995 a second meeting was held in the Netherlands. Some general results of these meetings are:

- An evaluation of the applicability of the ITTO criteria for and in sustainable management of Cameroon's forests.
- The agreement on the terms of reference for the establishment of a demonstration project in Cameroon.
- Implementation of such a project still needs further deliberation.
- Regional planning, institutional capacity (in terms of quantity and quality) in the field of forestry planning and control need to be give more attention.

The next meeting is planned before the end of 1995. For further information contact: Dr. Ir. F.J. Breteler, LUW, Vakgroep Plantentaxonomie, Gen. Foulkesweg 37, 6703 BL Wageningen, the Netherlands. Tel.: 08370-81009. Fax: 08370-84917.

Gabon

Gabon has a land area of 25.8 m ha of which more than 20 m ha are forested. Like Cameroon, Gabon's vegetation falls largely within the Guinea-Congolian biogeographical region. The two principal commercial timber species are *Aucoumea klaineana* (okoumé) and *Dacryodes buettneri* (ozigo), accounting for almost 80% of the total production. The 1993 national forest policy plan assigned 12 m ha as production forest and 4 m ha as forest reserves. The remaining ha are assigned as conversion forest.



It is estimated that 50% of Gabon's forest has already been selectively logged at least once, and that about 250,000 ha is logged each year, of which 60% is primary forest (read not yet logged-over, pers. com. Breteler) (sayer et al., 1992). The export volume in 1995 is provisionally set on 1.2 million m^3 for okoumé and 150,000 m^3 for ozigo. In recent years the export of okoumé is shifting from Europe to Asia, due to e.g. restrictions on the export of roundwood from Asia and the growing call within European countries for sustainable forest management and sustainably produced

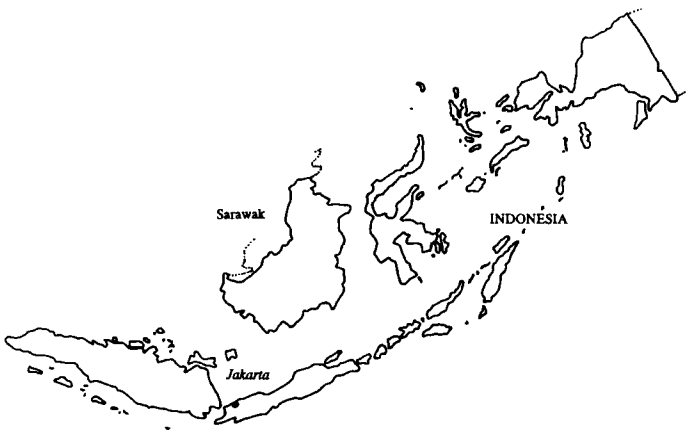
timber. In 1992 Gabon's export to the Netherlands of saw and veneerlogs accounted for 23,000 m^3 (19% of the total tropical saw and veneerlogs import of the Netherlands) (Dielen & Boer, 1993).

Bilateral cooperation

In April 1995 a technical mission from the Netherlands visited Gabon. This resulted in the following conclusions and recommendations:

- Gabon intends to realise the ITTO-2000 goal: having initiated sustainable forest management in 2000.
- The ITTO criteria and indicators are to be used.
- The criteria and indicators set by the Working Group of Experts on Sustainable Forest Management (DDB) (see NiEuWSLETTER no. 29, p. 26-32) are found inopportune.
- Gabon realises that the ITTO approach needs adjustments. In this respect it is agreed upon a comparison between ITTO and DDB criteria and indicators.
- Active support, on the basis of bilateral cooperation, is needed in several fields of Gabonese forest management.
- Both parties support the establishment of pilot-projects for sustainable forest management and certification.

The next meeting is scheduled for October 1995. For further information contact: ir. A Schotveld, IKCN, P.O. Box 30, 6700 AA Wageningen, the Netherlands. Tel.: 08370-74888. Fax: 08370-27561.



Indonesia

Indonesia has a land area of 192 m ha, scattered over 13,667 islands. The estimated total forest area varies between 117.9 m ha (Collins et al., 1992) and 144 m ha (Sormin, in Blockhus et al., 1992). The forested area varies

considerably between islands, of which Kalimantan (Indonesian part of Borneo), Irian Jaya (Indonesian part of New Guine), Sumatra, and Sulawesi cover the most. Wallace's Line, between Sulawesi and Borneo, divides the archipelago into two different biogeographical parts. *Dipterocarpaceae* is the principal commercial timber family. The policy of Land Use by Consensus (Ministry of Forestry, 1991) classifies forested land into: - nature conservation forest (19 m ha), - protection forest (30 m ha), - production forest (64 m ha), and - conversion forest (30 m ha).

More than 500 concession licences have been issued to 39 companies (Sarre, 1993) for over 56.7 m ha of natural forest, of which 30.6 m ha in Kalimantan, 15.6 m ha in Sumatra, 4.8 m ha in Irian Jaya, and 2.9 m ha in Sulawesi. In 1980 the government banned the export of logs, in order to stimulate processing industries and generate more revenues. Nowadays Indonesia is one of the leading exporters of plywood and sawn timber. Besides timber products the export trade of non-timber products (e.g. rattan, nuts, oil, and wildlife) is significant. By the year 2000 it is planned to have established 6.2 m ha of plantations for pulp and sawn timber production. In 1992 Indonesia's export to the Netherlands of sawn timber accounted for 46,000 m^3 (8% of the total tropical sawn timber import of the Netherlands) and for plywood 164,000 m^3 (51% of total tropical plywood import) (Dielen & Boer, 1993).

Bilateral cooperation

In January 1995 the first meeting of the Technical Working Group for Forestry and Trade Indonesia - Netherlands (TWG) took place in Jakarta. This resulted in the following conclusions and recommendations:

- It is intended to cooperate in the field of sustainable forest management, with focus on certification and tracking of products.
- Cooperation is intended in the field of social oriented forestry in Indonesia.
- Indonesia is working on a set of criteria and indicators for sustainable management and sustainably produces timber, as well as the establishment of the Lembaga Ekolabel Indonesia which will independently issue certificates.
- Pilot-projects are to be established in Indonesia as well as in the Netherlands in order to gain insight in the functions of natural forests.
- The criteria and indicators formulated by the DDB are to be made applicable for temperate forests.
- Inclusion of the DDB criteria and indicators in the CIFOR-project on tuning of criteria and indicators for sustainable tropical forest management took place in April 1995 in Kalimantan.

- The CIFOR-project should be supported for reason of establishment of internationally accepted criteria and indicators.
- Timber from conversion forests remains an issue of debate.

The next meeting was scheduled for May 1995, to be held in the Netherlands. For further information contact: ir. A Schotveld, IKCN, P.O. Box 30, 6700 AA Wageningen, the Netherlands. Tel.: 08370-74888. Fax: 08370-27561.

Malaysia

Malaysia has a land area of 32.9 m ha, divided over the three main regions Peninsular Malaysia (13.2 m ha), Sabah (7.4 m ha), and Sarawak (12.3 m ha). The forested area of Pininsular Malaysia is 5.5 m ha, of which 4.9 m ha is dipterocarp forest (Thang & Salleh, 1990). Sabah contains 4.5 m ha of forested land, of which 3.9 m ha are dipterocarp, montane, and disturbed forest. For Sarawak 8.7 m ha have been designated as forested land, comprising 7.3 m ha of dipterocarp forests. *Dipterocarpaceae* is the principal commercial timber family.

All thirteen state governments are empowered to enact laws on forestry and formulate forest policy independently. Forested areas in Malaysia are divided into three categories: - permanent forest estates, - state land forests, and - reserved forests (also known as totally protected areas) (Arentz, 1992). State land forest are conversion forests, whereas permanent forest estates are production or protection forests. Both Peninsular Malaysia and Sabah are more and more involved in the establishment of plantations and rehabilitation of logged forests in order to complement the supply of timber from natural forests in the future. In 1992 Malaysia's export to the Netherlands of sawn timber accounted for 393,000 m^3 (68% of the total tropical sawn timber import of the Netherlands) and for veneer 2,000 m^3 (15% of total tropical veneer import) (Dielen & Boer, 1993).

Bilateral cooperation

In June 1994 it was decided during the second meeting of the Joint Working Group (JWG) Malaysia - the Netherlands to establish a Joint Working Mission. Consultation at the ITTC meeting in November 1994 in Yokohama, Japan on the Terms of

Reference for the Joint Working Group resulted in the change of the name into Ad-hoc Expert Group. The first meeting of the Malaysia - the Netherlands Ad-hoc Expert Group on Sustainable Forest Management (AEG) was held in Kuala Lumpur in December 1994. This resulted in the following conclusions and recommendations (to the JWG):

- The ITTO criteria and indicators for sustainable tropical forest management provide a useful framework for Malaysian forests at national level.
- The ITTO Guidelines on the Conservation of Biological Diversity in Tropical Production Forest provide useful elements for inclusion into the Malaysian document "Criteria, indicators and activities for sustainable forest management in Malaysia".
- The criteria and indicators set by the Working Group of Experts on Sustainable Forest Management (DDB) provide a valuable contribution to the discussion on the Malaysian document.
- A follow-up meeting of the AEG should take place in order to review the agreed set of criteria for sustainable forest management at the national level on the basis of new and relevant criteria that have been brought up to the attention of the JWG.
- It is recommended that the JWG charges the AEG to gain more insight in the effectiveness of the criteria, indicators and activities at the national level and filed level.
- It is necessary that the Forest Management Unit (FMU) is set, as outlined by the ITTO criteria, and that criteria, indicators and activities at the FMU level need to be formulated by Malaysia and are to be discussed independently from the discussion at the national level.
- The relation between people living in and around the forests and the sustainable management of these forests might for the JWG be a subject of elaboration. The same goes for research in the field of increasing the area of virgin forest reserves, non-timber values of the forests in relation to sustainable management, and biological diversity, especially to investigate the appropriate size of conservation areas per forest type.

For further information contact: ir. H. Diemont, IBN-DLO, P.O. Box 23, 6700 AA Wageningen. Tel.: 08370-77863. Fax: 08370-24988. Email: w.h.diemont@ibn.agro.nl The bilateral activities are coordinated by the Ministry of Economic Affairs. Contact: Mrs. Mr. A.D. Adema, secretary Framework Agreement Tropical Timber, Department of Multilateral Economic Cooperation, DG BEB, Ministry of Economic Affairs, the Netherlands. Tel.: 070-3798911. Fax: 070-3474081.

Pilot-projects in the Netherlands

In accordance with The Dutch Government's Policy Paper on Tropical Rainforests, the Framework Agreement on Tropical Timber, international processes on sustainable management of global forests (like e.g. the Helsinki and Montreal process), and the agreements resulting from the bilateral cooperation between Indonesia and the Netherlands two pilot-projects on sustainable forest management were executed in the Netherlands.

The Mastbos

The Mastbos pilot-project, executed in 1992, was implemented in order to test and gain experience with the applicability of the ITTO criteria and indicators for sustainable forest management in the Netherlands. The study has been done on the basis of the Mastbos Management Plan 1991-2001 (NFS, 1991) and resulted in the report "ITTO criteria and indicators in forest management in the Netherlands" in October 1994 (Busink et al., 1994).

In line with the ITTO criteria and indicators several aspects were evaluated, like:

- Resource security (e.g. legal-institutional framework for the conservation and size of the forest, existence of an approves management plan, threats, and socio-economic aspects).
- Preservation of the forest ecosystem (e.g. inventory and monitoring of flora and fauna, research, and protection).
- Continuity of timber production (e.g. choice of tree species, natural regeneration, harvesting rules, and cost/benefit analysis).
- Landscape and recreation (e.g. existence of landscape policy plan, demands, effects, and control of recreation, and cost/benefit analysis).

It was concluded that the ITTO criteria and indicators may very well be used for the assessment in the Netherlands. They proved to be most relevant with regard to the assessment of the national forest policy. Criteria and especially indicators had to be further specified and detailed for the management unit level. Though adjustments had to be made, and though not all indicators can be measured and calculated entirely objectively and mathematically foolproof it was concluded that management of the Mastbos sufficiently meets most criteria and therefore might be considered as sustainable. Ecological influences of air pollution and lowering of the watertable are still important matters of discussion. It was recommended to conduct more studies, of which the Kroondomeinen pilot-project is a result.

For further information contact: ir. R.L. Busink, Directie Natuurbeheer, Ministerie van Landbouw, Natuurbeheer en Visserij. P.O. Box 20401, 2500 EK Den Haag, the Netherlands. Tel.: 070-3793911. Fax: 070-3478228.

Staatsdomein Het Loo

As in the Mastbos the pilot-project in the Staatsdomein Het Loo was executed in order to gain more experience with criteria and indicators for sustainable forest management in the Netherlands. The main difference however was that the criteria and indicators tested were not from ITTO origin but were drawn up by the Working Group of Experts on Sustainable Forest Management (DDB). The goals were to test the relevance of the DDB evaluation system and the criteria and indicators for sustainable forest management in the Netherlands, to find out if new indicators are to be applied, and to find out what could be possible standards for the indicators at forest management unit level.

Although the final report is still in preparation, some provisional conclusions are:

- The DDB evaluation method can be used. Criteria and indicators are applicable for both national and forest management unit level, though some adaptations are necessary.
- At national nature and forest policies level adaptations are suggested in the field of guidelines for sustainable forest management and definition of forest categories.
- Adaptations of criteria and indicators are proposed and are to be tested in order to refine the proposed indicators.

For further information on "Testing Criteria and Indicators for Sustainable Forest Management in the Netherlands" contact: ir J. Geenen, SBW Consultancy & Research, P.O. Box 590, 6700 AN Wageningen, the Netherlands. Tel.: 08370-15715. Fax: 08370-97825.

Tracing of the timber flow

In accordance with the Framework Agreement on Tropical Timber the Ministry of Housing, Physical Planning and Environment (VROM) commissioned Coopers & Lybrand Management Consultants and Stichting Keuringsbureau Hout (SKH) to develop a timber certification systematics. The project started in November 1994 and it is expected that in September/October 1995 the system will be ready to be implemented.

The project is intended to develop a certification system by means of a monitoring system for the tracing of the timber flow and resulting in a "Certificate of Origin and Sustainable Production" (CHDP). The system will be limited to the Dutch market, taking into account the expansion within European connection or affiliation with an international system. The CHDP-system makes several assumptions, of which the most important are:

Sustainable forest management, sustainably produced timber, and certification. If everyone puts one's shoulder to the wheel, we can make it happen! ©Goos van der Veen.

- Timber is sustainably produced and is identifiable as such at the Dutch border.
- The origin of timber is a guarantee for the "sustainably produced"-aspect.
- Timber undergoes changes (process) passing through the timber chain. Physical hallmarks may disappear.
- A timber lot is given certificate rights related to the amount of m^3.
- At every division within the chain an equivalent part of the certificate rights will be assigned to each part.
- In the last chain, just before the consumer, a certificate is given to the product based on the amount of certificate rights and indicating the product's percentage of sustainably produced timber.

In a recently accepted concept notice emphasis is placed on the feasibility and reliability of the system. Furthermore, it is stated that the system has to be voluntarily, the certificate will be a "Certificate of Sustainable Production", and that the certificate should affiliate to international systems like ISO (International Standardization Organization).

It is planned that from July until September a pilot project will be executed. In several pilot companies, selected in cooperation with the members of the Project Group Timber Certification (involving the Netherlands Timber Trade Association, the Netherlands Association of Timber Agents, the Ministry of Agriculture, Nature Management and Fisheries, the Ministry of Economic Affairs, and the Ministry of Housing, Physical Planning and Environment), the systematics will be tested. After evaluation of the pilot project it is expected that in September/October the system will be elaborated and designed and that a plan of implementation will be drawn up.

For further information contact: drs. S.M.H. Meijs, Directie Internationale Milieuzaken/IPC 670 Afdeling Mondiaal, Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer. Tel.: 070-3394715, Fax: 070-3391306, Email: Meijs@DGM.DIMZ.minvrom.nl.

Decree on Sustainable Building

In line with the Dutch National Environmental Policy Plan (NMP 1 and 2, 1989 c.q. 1993) last year the "Beleidsverklaring Milieu-taakstellinge Bouw 1995" (BMB '95; Policy Statement Environmental Assignments and Building 1995) was drawn up. One of the tasks set was that within the building and construction industry 20% more sustainably produced timber is to be used as replacement for other, non-replaceable, materials. The assignments were drawn up by the "Milieuberaad Bouw" (MBB; Environmental Deliberation Building), consisting of the government and building and construction industry representing organisations.
In accordance with this process a new Decree on Building called "Sustainable Building" is in preparation by the Ministry of Housing, Physical Planning and Environment.

Forthcoming

In the next article, in NiEuWSLETTER no. 32, information will be given on non-governmental and private initiatives e.g. SNV/HIVOS in Bolivia, ICCO/SWIFT in the Solomon Islands, the first certified sustainable managed forest in the Netherlands, and teak plantations in Costa Rica.

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"We don't want a Road, it will bring Development."
Management of natural vegetation by indigenous peoples.

Etienne Verlaat

Keywords: indigenous peoples, sustainable forest management, indigenous knowledge, social forestry, indigenous forest management.

Development projects often did not bring "progress" for indigenous peoples. On the contrary. A lot of these projects, among which forestry projects, meant a severe attack on indigenous cultures. The wishes, rights, knowledge, and the specific characteristics of indigenous cultures were often not taken into account. However, sustainable management of natural vegetation can easier and better be reached when the role indigenous peoples can and want to play is being recognized.

Introduction

"We don't want a road, it will bring development", called out a member of the Ho-people (India) in a meeting and everybody nodded in agreement (Burger, 1987). For indigenous peoples there is a lot of truth in these words. Indigenous peoples have often been the victim of development projects aiming at the development and civilization of these peoples. However, indigenous peoples hardly ever benefitted from the executed development projects. Indigenous peoples were hardly ever asked what they wanted. The traditional skills, knowledge, and management activities of indigenous peoples have been severely undervalued by scientists, governments, and organisations working in the development field.

In this article I want to make clear that indigenous peoples often have been overlooked, while they are one of the key-actors in accomplishing sustainable management of natural resources. Before concentrating on the level of the management of natural vegetation, first a closer look is taken at a broader field: what is the socio-political context from indigenous peoples and their environment.

Indigenous peoples

The term "indigenous peoples" is a term that is internationally becoming more and more frequently used for a group of peoples who have more or less the same characteristics. It is however a difficult term: it's not always simple to say who is indigenous and who is not. An indigenous people may hold all of the following elements or just some. Indigenous peoples:

1. are the descendants of the original inhabitants of a territory which has been overcome by conquest;
2. are nomadic and semi-nomadic peoples, such as shifting cultivators, herders, hunters, and gatherers, and practice a labour-intensive form of agriculture which produces little surplus and has low energy needs;
3. do not have centralized political institutions, organize at community level, and make decisions on a consensus basis;
4. have all the characteristics of a national minority: they share a common language, religion, culture, and other identifying characteristics and a relationship to a particular territory, but are subjugated by a dominant culture and society;
5. have a different world-view, consisting of a custodial and non-materialist attitude to land and natural resources, and want to pursue a separate development to that proffered by the dominant society;
6. consist of individuals who subjectively consider themselves to be indigenous, and are accepted by the group as such (Burger, 1987).

The third point is related to the terms tribe, tribal etc.. However, I prefer not to speak about tribal people but about indigenous peoples, because tribal is often associated with "primitive". To my opinion indigenous peoples are not at all primitive, in fact we can learn a lot of them. Besides, the term indigenous peoples is internationally becoming an accepted term for a certain group of peoples. For example in the formulation process of the United Nations "Universal Declaration of the Rights of Indigenous People".

The most important right indigenous peoples want to be respected is the right to self-determination. So indigenous peoples can decide for their own future, so they can develop in their own way and at their own speed.

Socio-political context

Indigenous peoples are different from non-indigenous peoples, and so they face different problems. These problems have often to do with the discrimination of indigenous cultures. There has been little attention from (forestry) scientists and others for the differences between indigenous and non-indigenous peoples. Analyses were not made about indigenous peoples distinct from other groups. Analyses were only considering economic modes of production or social classes. Indigenous people were thus classified as peasant, unskilled labourer etc. (Fabig, 1993).

A report for the Independent Commission on International Humanitarian Issues (Anonymous, 1987) shows an interesting description of the socio-political aspects of the deforestation of the area of a Karen village. This case is a good example of more or less similar problems indigenous peoples in other parts of the world face.

Case of the Karen

Until 1974 the people of the Karen village in Mae Hong Son district of North-West Thailand, hardly saw an outsider. Their village was a four hour walk from the nearest road, mostly uphill and through thick forest. When the agents from the logging company arrived, waving pieces of paper and talking about concessions, they attracted the curiosity of the local people. But their welcome was short-lived. They explained that they had governmental permission to fell trees in the area. The elders unanimously objected.

An older Karen woman mixing western and traditional clothing . ©Etienne Verlaat, 1991.

A month later the agents returned. They told the people that only the big trees would be cut and that the company would be building an access road which would make travelling to and from the village easier. They also said that there would be work available for the villagers and that a percentage of the trees cut would be given to their community. Some of the elders signed the agreement. For those who dissented, the agents had brought another piece of paper. This, it was explained, would be presented to the forest department to show there was opposition. But as it turned out, the document was an agreement giving the logging company permission to fell their trees. Since most of the villagers were Karen-speakers who could not read Thai, they had taken the agents' word for the contents of the document.

The access road was build and the company began its operations. The villagers complained to the district administration but no notice was taken. The logging company, having felled the large trees, began cutting down all the timber in the concession area. The community collected money to pay for one of the better educated Karen to go to the district administration once more and to plead their case. On his return he was shot and wounded by a hired gunman. He told his story to the police but was accused of being a trouble-maker and a communist sympathiser and threatened with imprisonment. The shooting and the threat of police violence stopped their protests.

A little over a decade later, the village can now easily be reached by road. The company concession has expanded and entirely surrounds the village. Not a single indigenous villager was employed and none received any compensation, even though they lost their gardens and all fruit trees they had planted. Before the company arrived the surrounding forest was used for shifting cultivation and the community was more or less self-sufficient in rice and other basic foods.

This road of development brought the Karen a walk of ten kilometres to reach their fields, which are considerably less fertile. Many people do not have enough to eat and the water supply in the nearby river is seriously affected. The reforestation programme, which is now being implemented forbids animal grazing in the replanted areas (Anonymous, 1987).

Indigenous peoples and management of natural vegetation

Indigenous peoples have long been considered as peoples who only exploit their environment. It was believed that as hunters, gatherers and as shifting cultivators they were no more than primitive, underdeveloped, passive people who hardly could survive. Only recently scientist are becoming aware that these people have an enormous knowledge about the flora and fauna in their environment, that shifting cultivation is not an underdeveloped economic and ecological system, and that indigenous peoples are active managers of their environment.

Example of the Tukano

Fabig (1993) gives an example of the knowledge of the Tukano of Brazil. The Tukano indians are aware that the trees which are growing on the fertile land near the river are essential for the whole ecosystem, especially for the fish stock in the river. That's why they have a complex system of taboos preventing the deforestation near the river and

fishing in certain parts of the river. Fabig states that a western development project would have cut the trees to make agricultural fields that are easy to irrigate.

Example of the Punan

Although nowadays all Punan communities practice some agriculture, the Punan of Kalimantan are still in the first place specialists in forest extraction. Thereby, a sense of stewardship constantly influences the manner in which they exploit their environment. The Punan of Bulungan use management strategies which are based on sustained yield principles. An important concept in this respect is 'ayu hen'. Firstly this means ownership of a certain natural resource by an individual or a community and in the second place to set aside for the future (De Beer, in prep.).

A good example is the extraction of "gaharu" or eaglewood. Eaglewood is a resinous incense wood, produced by diseased tissues of certain individuals of *Aquilaria malaccencis*. Since ancient times this highly valuable product is used in Chinese and Southeast Asian medicine, as well as for incense and cosmetics in the Middle East. The demand for eaglewood has increased since the seventies. For those communities who have no access to bird's nests caves, eaglewood generally is at present the best marketable and as such the best source of income available.

The amount of eaglewood collected during an expedition is highly variable. Often a trunk contains little or no eaglewood, or eaglewood of law grade. Where a Punan collector spots an Aquilaria tree which has not been claimed yet, he or she will make small holes in the tree's trunk to investigate its content. If no traces of eaglewood are found in the trunk, the finder will mark the tree by placing a sloping stick before it. In this way, the first finder claims ownership to this particular tree. The scars in the trunk stimulate the development of eaglewood. After some time, the same tree is investigated again. Only if the trunk contains eaglewood, the whole tree is felled. With these harvesting practices regeneration of Aquilaria stands will not be threatened. However, with the current "eaglewood-fever" in Kalimantan, increasing numbers of outsiders are invading the areas of the Punan. These outsiders rarely respect Punan ownership to marked trees. What is worse: they will cut every Aquilaria tree they encounter, because: "You never know if there is a little bit of it deep inside the trunk". In this way Aquilaria stocks will be depleted rapidly. De Beer (in prep.) concludes that control over forest management in Punan areas should be allocated to the communities that inhabit these areas.

Case of the Kayapó

The Kayapó are an other interesting example of how indigenous peoples manage their environment in a sustainable and active way. It also shows their rich knowledge about their environment. There are not many researchers who investigated indigenous ethnobiological/ethnoecological knowledge. Posey is one of the few exceptions. He did extensive research among the Kayapó from Brazil. According to Posey indigenous practices can be the basis of new models for ecologically and socially sound development. Recently Plotkin (1995) made clear what the importance is of indigenous knowledge for searches for new medicines in the Amazon Rain Forest.

The knowledge of the Kayapó is an integrated system of beliefs and practices. The Kayapó have knowledge that is generally shared and they have specialists knowledge, held by only a few. They have specialists in soils, plants, animals, crops, medicines, and rituals (Posey, 1989).

Kayapó view forest management as an integrated system of plant communities rather than individual species. That's why certain plants are associated with each other. These plants are synergetic to each other. The Kayapó say these plants are "good friends" or "good neighbours". The Kayapó have a precise knowledge of insect behaviour. They use it in the control of agricultural pests. Nests of ants of the genus Azteca are for instance deliberately placed in gardens and on fruit trees which are infested with leaf-cutters. The Azteca ants have an odour which repels the leaf cutter ants.

The Kayapó villages today are only remnants of ancients villages once linked by sizeable and extensive trails. Until recently Kayapó groups used to travel a lot. Today they still carry out several month-long treks per year. The food gathering for 150-200 people is not left to chance. On their way plants are gathered, and are planted into concentrated spots near trails and campsites. Also the sides of trails are planting zones (Posey, 1985). In the fields that are not any longer being used for the production of domesticated crops, often called abandoned fields, there is a concentration of highly diverse natural resources. These fields are not abandoned as often is believed. They continue to produce for many years (see table 1). These old fields attract wildlife. However, a delicate balance is necessary to manage old fields. If the density is too high their is too much damage to the crops.

Table 1: Some Kayapó food crops and their productive period.

Crop	Years
sweet potatoes	4-5
yams & taro	5-6
manioc	4-6
papaya	5 or more
banana	15-20
urucu	25
cupa	40

The Kayapó classify savanna into a variety of folk ecological zones or "ecozones". The term ecozone is used by Posey to refer to ecological zones recognized by indigenous peoples. The Kayapó have 9 principal ecozones for savanna, 5 ecozones for transitional types of savanna and for the "forest islands" that occur in the savanna they have 8 names.

We can see a continuum from forest to savanna. In the middle there are the so called forest islands or "apêtê". These forest islands are composed of many sun-tolerant, heat-resistant species that survive in the demanding climate of the savanna, yet also contain many forest species. Thus they unite elements of both poles of the continuum.

In the neighbourhood of the village Gorotire there is an increase of forest islands. A cursory examination showed that these forest islands are natural. However research pointed out that 75% of these forest patches was man-made: 85% of the plants collected in a 10 sample forest island was actually claimed to have been planted by the indians.

For the Kayapó the most productive ecological systems are those in the secondary forest created through human activity. Whether forest islands in the savanna, or old fields in the forest, the Kayapó system is built upon the maintenance - or actual increase - in biological diversity. Forest "patchiness" is the principal mechanism for the preservation of diversity. Kayapó resource management therefore focuses upon the intermediary forms between the forest and savanna types, because it is in these zones that maximal biological diversity occurs. The indians not only recognize the richness of "ecozones", they create it.

According to Posey: presence of extensively managed areas by indigenous peoples emphasizes the necessity for the re-evaluation of concepts about the natural landscape.

"Naturalness" of ecological communities can never be assumed without investigating the human history of the area.

Forestry and indigenous peoples

The examples from the Karen, Tukano, Punan and Kayapó show how indigenous peoples become marginalized by development and modernisation and how their knowledge, interests, and management activities have long been underestimated. The problems in the cases mentioned are amongst others: deforestation, environmental degradation, poverty, unequal distribution of wealth, destruction of indigenous societies, and neglect and loss of valuable knowledge. We can ask ourselves what are the causes behind these problems indigenous peoples face? The following notes are made.

The case of the Karen makes clear that development is still often only measured in economic terms. Thailand is in economic terms developing very quickly. It has one of the highest growth rates. Development is only measured in terms of Gross National Product, whereas social and ecological aspects are not taken into account (Verlaat, 1991). It was shown that outsiders got all the profits of the exploitation of the natural resources that used to be the natural resources of the Karen. This forestry development project didn't take any notice of the interest of the Karen.

It is often said that large forest areas are unproductive and unoccupied. The Amazon for example is one great frontier were only a few primitive indians and cultureless caboclos struggle to survive (Posey, 1989). However, this is only a weak argument for outsiders wanting to have control over these natural resources. The Kayapó do actively manage their environment. From an ecological perspective this system is very sustainable, from an economic point of view this system might be a rather good alternative. However, in general forest dwellers are isolated and politically weak. They often know nothing of the developments being planned by government officials and outside consultants until it is too late. In any case, since most have no legal title to the land they live on, they face the combined forces of settlers, the courts, the police, and in extreme cases, the army (Anonymous, 1987).

The theory of Adam Smith tells that from an economic point of view specialising is the best thing to do. The western approach to agricultural development (including forestry, E.V.), is to eliminate complexity and impose a limited and controlled range of specific cash crop monocultures (Posey, 1984). Reducing complexity might at first sight seem to be a rational strategy, but the question should be wether the elimination is suitable. From the point of view of sustainability, especially in tropical areas, biological

diversity is desirable. Among others the many diseases that threaten monocultures are an important reason for this. For management systems of natural resources it means that we have to deal with more species, and consequently the management system will be more complex.

Forestry science and forestry development project are influenced by other sectors in the field of development. Forestry also used to be very much eurocentric oriented. Forestry has is roots in the Germany, from where it spread throughout the world. The major characteristic of "classical forestry" is the emphasis on the production of wood for the industry. However, in the nineteen seventies a new kind of forestry became more important: social forestry or community forestry. In this new type of forestry more attention was given to social aspects of forestry. However, social forestry is also being criticized, and many social forestry projects seem not to be very successful. One of the major causes for this is the fact that forestry activities got a sort of social component added to the normal "business as usual" forestry practices.

Karen children. For how much longer will they be able to keep up the Karen way of life? ©*Etienne Verlaat, 1991.*

Dargaval (1985) criticizes social forestry: "It is just an acardian version of the industrial forestry's trickle down theory; it has not gained credence by having its scale diminished. It fails as industrial forestry failed, to see poverty as an issue daily produced and reproduced by the structures of society. The objectives of decreasing poverty trough increasing access to resources of fuelwood and fodder can not be met through the existing social structures which ensure that those who are exploited remain exploited... . Social forestry is being implemented through governments and their forest services, which have retained their colonial organization and style. They are very much part of the social structure that reproduce poverty."

According to Umans (1993) in his study about indigenous forestry management, it still is more or less: "they" should participate in "our" projects. The technology, although recently it has become more appropriate, still is based on western knowledge. The problem with this is that often still a gap remains between the knowledge of the local people and the new technology. Consequently the local people can not independently develop this technology, but stay dependent on outside knowledge. Besides this gap the question still remains whether the western scientific approach is appropriate enough for tropical circumstances. Western science has difficulties with the complex reality in the tropics. For indigenous peoples there are no neat boundaries between hunting, gathering, and horticulture. The case of the Kayapó made this clear. According to Posey (1984) this is an important reason why the knowledge of indigenous peoples is being overlooked.

Indigenous forest management

When the knowledge and wishes of the local people are the starting point of an intervention from outside, there is a good chance of self-development when the input of foreign money stops.

Only recently we can see the first signs of another kind of forestry: indigenous forest management. The description Fisher (1989) gives of indigenous is: the term indigenous refers to systems that are generated by internal initiative within a local community itself. Externally sponsored refers to systems that are set up by outside agencies.

Hopefully this new area in forestry, indigenous forest management, will recognize the value of the knowledge indigenous peoples have build up in thousands of years, and that with this recognition it will become clear that indigenous cultures have great value for mankind.

To finalize I would like to make the following statements:

1. The aims of most of the executed forestry projects are not being met;
2. These aims didn't take into account the wishes and the interests of indigenous peoples;
3. The executed forestry projects have not had any interest in the knowledge and the management activities of indigenous peoples;
4. The failure of many forestry projects is due to the ignorance of the wishes, the interests, knowledge etc. of local people, and especially indigenous peoples.

I agree with Vestergaard (1992) when she states that there is an urgent need that future resource management strategies are based on:

1) Sustainable exploitation;
2) Protection and survival of as many biological/zoological species as possible and of as many human cultures and societies as possible;
3) Co-management involving local population and to the economic and social benefit of the local community;
4) Acknowledgement of the local rights and local knowledge.

However, I would like to add that:

1) Indigenous knowledge and management systems have a lot to offer for the sustainable use of natural resources. We should be aware of the fact that with the disappearance of indigenous cultures, also this knowledge is disappearing.
2) Forestry science should become more aware of the socio-political and cultural context related to forestry issues. It should be kept in mind that indigenous people differ from non-indigenous peoples;
3) We should be aware of the negative bias in existing literature towards indigenous peoples and indigenous knowledge.

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Tales of A Shaman's Apprentice: An Ethnobotanist Searches for New Medicines in the Amazon Rain Forest.

Mark J. Plotkin

For thousands of years healers have used plants for curing the ill. Aspirin, one of the world's most widely used medicines, is based on substances which were originally extracted from the skin of a willow. Over 25% of all medication you can find in a drugstore contain vegetable ingredients. Now that western medicine is confronted with serious problems such as AIDS, Alzheimer's Disease and cancer, medicinal plants those native peoples are using have attracted attention for the future developments of new medicines.

In the Amazon, the world's largest rain forest and the environment of 25% of all species of plants that exist on earth, lie enormous possibilities. Ethnobotanist Mark J. Plotkin reports on his travels and research in this book. "The wonder drugs of the future are growing in the rain forest, today", Plotkin says.

Dr. Plotkin is one of the world's leading ethnobotanists. He travelled to the rain forests of Amazonia to record the traditional medical plant knowledge from indigenous healers there. His search for new medicines led him to native plant experts, elderly shamans and tribal leaders. Powerful shamans ("witch doctors") welcomed him at tribal rituals and assisted him in identifying plants. He learned about native salves, antibiotics, and hallucinogens. Plotkin took a look in Mother Nature's drugstore.

Dr. Mark J. Plotkin with a Trio indian, Suriname. ©Elmar bv Publishers.

"The shamans possess an incredible store of knowledge about medicinal plants, knowledge we can benefit from", says Plotkin. Sadly, that knowledge may be as endangered as the rapidly disappearing rain forest. Plotkin does not only document the problems but he also finds solutions. He tries to rekindle interest in native botany among young indians. He encourages them to preserve their heritage of botanic lore and customs. He sees his expeditions as missions, before it's too late and all the plants and the knowledge about medicinal plants will be lost forever.

In his colourful and intriguing book he gives us a clear sense of how field scientists make discoveries upon which modern medicine depends. Drug companies have been slow to realize the potential of rain forest plants.

Mr. Plotkin's book, *Tales of a Shaman's Apprentice*, is published at the right moment. There was never before so much interest in the rain forest and forest medicines. It has been the theme of many conferences, exhibitions, and publications in the last few years. Mark Plotkin's book is especially interesting since much of the research on rain forest medicine is very fresh; Mr. Plotkin is on the frontier of tropical ethnopharmacology.

Born and raised in New Orleans, Mark J. Plotkin attended universities of Harvard, Yale, and Tufts. As ethnobotanist he did extensive research in South America. He was in charge of botanical projects of the WWF and as scientific researcher he was associated with the Botanical Museum of Harvard University. At the moment he is vice-president of Conservation International.

"If you want to keep abreast with ethnobotany in a highly readable and taking narrative way this book should be on your list of desiderata." Peter Sips.

In de leer bij de Sjamanen. Een botanicus op zoek naar nieuwe medicijnen in het Amazone regenwoud. Price: Dfl. 39,50,-. ISBN: 9038902603. Paperback, 320 pages, illustrated in black and white. Elmar bv Publishers, Delftweg 147, 2289 BD Rijswijk, the Netherlands, tel.: 015 - 123623, fax: 015 - 124295.

Tales of a Shaman's Apprentice. An ethnobotanist searches for new medicines in the amazon rain forest. Price: $22. ISBN: 0670831379. Penguin Books.

Opinion.

Timber Certification and the Quest for Sustainability.

Hubert Kwisthout

Now that timber certification seems firmly on the agenda, it is time to consider some of its impact of forestry operations globally and, in particular focus on its role with regard to the issue of sustainability.

There are two sides to certification: on the one side we have the consumers, on the other there are producers. What certification, as a consumer-driven operation, most certainly can achieve is to guarantee consumers to a sufficient degree that they are buying timber products that come from "good" -i.e. certified- sources.

Furthermore, providing that there will be a steady demand for certified timber, certification without doubt will lead to an increase of certified timber becoming available onto the market.

At first glance we might think that this is exactly what we were aiming for: after all, we could argue, more certified timber surely means that more forests are managed sustainably.

This, however, is something that cannot be automatically be assumed. What certification does, is giving a quality guarantee for products from specific forest operators: it does not say anything about any of the other operations in the world. There may be -and obviously will be- many more potentially certifiable forest operations which, for some reason or other, are not (yet) being certified. Equally there will be many that are not up to standard. We can therefore not be certain taht more certified sources implies that the quality of forestry operations worlwide has improved -merely that a growing number of acceptable sources has been identified.

To assess the impact of certification on forestry operations we must move away from generalities and concentrate at what is happening -or may happen- on the ground. And we can already see the pattern that is developing. For if we look at the total size of the forest areas that hitherto have been certified on the basis of FSC compatible criteria, we find that by far the largest proportion is made up of temperate forests of North America and Europe. The volume of timber coming from these areas -the crucial factor as far as the timber trade is concerned- outweighs the volume of timber coming from tropical areas. There are, of course, some tropical forest areas that have been

certified. But the two largest are plantations, and the remainder consists of a handful of tiny community projects which together produce a volume of timber that is insignificant in terms of world trade.

Furthermore, if we consider the areas that are already up to certifiable standard or close to it, it are again the temperate and boreal forests of the northern hemisphere that are dominant in terms of available volumes of timber. And, as the timber trade is a high volume trade, it will gravitate towards the areas where most of the certified supplies can be obtained and leave aside the areas that cannot come up with goods in adequate quantities.

It is therefore not too difficult to see that the certified timber products we can expect to find in the shops in the foreseeable future will by and large come from forest areas in Canada, the USA, and Europe.

In addition some of the non-tropical producers in the southern hemisphere may be able to have their operations (of which many are plantations) certified. We may further expect that a small number of tropical countries will be able to get some of their timber production onto a FSC certifiable level in the coming years. But it is by no means clear as yet how much and what the volumes of certified timber are likely to be.

We can quite realistically predict that by far the majority of tropical countries will not have the financial and organisational means to get their operations onto sustainable levels. This is not to say that within these countries tiny experimental projects aimed at producing on sustainable levels cannot be found. But in relation to the total volume of harvested timber they probably will be negligeable.

Where does this leave us?

In the scenario outlined above it will be exactly the forest areas that we were intending to protect in the first place -the tropical forests- that are in danger of being beyond the pale of certification. This obviously does not mean that logging operations in these areas will come to a halt. It merely means that the uncertified and uncertifiable timber will be sold to parties who are less fussy tahn the ones insisting on certified material. And there are plenty of them around.

The cynics amongst us -or perhaps it is better to say the realists- will say that this course of events would merely prove what we already knew. This may or may not be so. The question, however, is how we think to solve the problem.

Although this is not the place to enter into this discussion, it may be of use to highlight some important aspects regarding this matter to see if there are indicators that may point us in a direction to take.

First of all, the fact that the issues of forest management and certification are debated widely shows how successful environmentalists heve been in drawing our attention to the problem. Unfortunately the environmental community by and large has not presented us with workable solutions as to how to solve it.

I would argue that the failure to come up with solutions stems to a large extent from the fact that environmental concern has been focused on the results rather than on the causes of the processes of destruction. Rainforest campaigns have been primarily negative against further destruction. This, however, is a world apart of campaigning for something in the sense of supporting alternatives. Trying to develop solutions requires a totally different way of approaching things.

Unloading sawn timber, awaiting shipment to the Netherlands.
©Chris van der Goot, 1994.

What we have to realise is that both the process of destruction and its opposite -sustainability- are the result of human action. It is of great importance to emphasize the human aspect in this. After all, we do not talk about sustainability in connection with hurricanes or vulcanoes. Sustainability refers to the result of human action: this may seem obvious, but the most obvious things are often forgotten.

Therefore the human element should be central, both in the analysis of the problems and in the development of possible solutions. I would argue that the only lasting way in which peoples' destructive behaviour can be changed is by developing realistic alternatives. Our task is to create the conditions under which sustainability becomes

possible, and for this, people must have the opportunity to do things in a better way. Unfortunately, such opportunities are mostly not readily available: they must be developed.

Certification, as a consumer-driven, market-oriented tool, does not address the question of the causes of environmental destruction. It merely assesses sources and products and gives a yes/no verdict. By itself it cannot and will not do the job of improving the overal level of forestry activities: it is a necessary but not a sufficient element in the process of encouraging better forest management.

But the Forest Stewardship Principles and Criteria, apart from providing a basis for the assessment of natural forest management, can also serve as a guide for the direction in which we want to see forestry develop. What, then, is needed in addition to certification is a development strategy which is aimed at the improvement of forest operations in order to make them certifiable.

In several tropical forest areas around the world experimental and research and development projects are taking place that are broadly working towards sustainable forestry practices. But their total number is few and is wholly inadequate when compared to the scale of the problem. A far greater effort must be made to expand this area of activity.

To be able to make real progress in the development of sustainable forestry operations worldwide it is necessary that the three major interest groups in the field -environmentalists, developmentalists, and the timber industries- find a way to get together and try to work out the boundaries within such development might take place.

This is easier said than done. There is a severe lack of understanding and a great deal of ignorance about each other and each others' activities, difficulties, and possibilities. It reflects the differences that exist in the economic basis on which the three groups are operating and their different fields of interest.

Environmentalists have tended to focus on the environmental, and more specifically biological, aspects of forest destruction. The role of humans in the process -in the negative but in particular in its (potentially) positive sense- has untill recently largely been neglected. Fir this reason communication with development organisations has been largely absent. With regard to commercial interests the feelings range from a certain uneasiness to a deep hostility. I would argue that, amongst environmentalists there is a general lack of understanding of the social-economic realities underlying the forest industry and timber trade.

Developmentalists are preoccupied with the improvement of the human condition, and have only recently began to pay attention to the environmental aspects of development. Just like environmentalists, development organisations are operating on a non-commercial basis. This may account for the fact that the economic or commercial aspects of the projects are not always be fully considered, especially when they are linked into a larger (international) network of commercial organisations. Also within the development world there is but little knowledge of the workings and requirements of the timber industry.

The timber industry is the only one of the three groups that is operating on a commercial basis. This is a fundamental difference wich sets them apart from the others. For the timber industry commercial interests on the whole outweigh any other - self-preservation is the order of the day. To date the industry has shown little interest in any of the concerns of the two other groups. The industry, by and large, has shown itself only to be prepared to change its ways of operating if it is forced by commercial considerations, legislation, public pressure, or otherwise. Notwithstanding overwheliming evidence to the contrary, the industry's public stance has been -with one or two exceptions- that there is nothing wrong with the industry or its natural resources. This simplistic way of reasoning -I don't see the problem so it is not there- is completely unacceptable.

It is probably correct to say that the timber industry as a whole has been relatively unaffected by the campaigns of environmental groups: most of this sector is operating as it was before. The representatives of the industry that have come under greatest attack have been those taht are directly in the public eye, such as large retail outlets (DIY chains) and some large timber importers. It is therefore not surprising that especially the former have been in the forefront of pressing for change.

As I have argued above, pressure for change is one thing, the ability to make the change is another. It is wholly unrealistic to expect commercial organisations to stop trading in timber from bad sources as long as timber from better sources is not available on any commercial scale. The task that lays before us is to insure that this timber will become available.

To achieve this it is necessary for the three aformentioned groups to climb off their respective platforms and adopt a more realistic and flexible approach to the problems that are facing us. What we want to see is the active support for a variety of alternative ways of development, be they small or large, even when there may be doubts about their feasibility.

Small-scale local people forest exploitation. Can it serve as alternative in the development of sustainable forest use? ©Chris van der Goot, 1994.

We must not forget that the process of developing alternatives is very much a question of a self-fulfilling prophesy: when enough people think a particular initiative is a good idea and lend their support, the chances that it will succeed are so much greater; if, on the other hand, they think it will fail anyhow and do not want to get involved, we can almost be certain that indeed it will fail. What we need is less talk and more action.

After all, to end with the words of a well-known scientist:

"the philosophers have only interpreted the world in various ways, the point however, is to change it."

The author

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BOS News.

NC-IUCN/RTR-Programme.

The Netherlands Committee for IUCN has acquired the management of a fund for the execution of the Dutch Governments Policy Paper on Tropical Rainforests. Along with the central objective "to encourage the preservation of the tropical rainforest through balanced and sustainable land and forest use, with a view to halting the current rapid process of deforestation along with other environmental damage and degradation" and in coherence with the IUCN objective "conservation and use of ecosystems and biodiversity" this fund is created for NGO's working in this field, preferably in rainforest countries. The most important criteria for project proposals are:

- the project must be clearly linked with conservation and management of tropical rainforests,
- the total project budget may not exceed US$ 75,000 (no co-financing),
- preferably no inclusion of Dutch consultancies, scientific research proposals, and traveling costs, unless indispensable for the realization of the project objectives.

Furthermore, guide-lines for formulation of proposals are drawn up, and funds will be equally devided over regions and themes.
BOS-members will probably have contact with/knowledge of reliable NGO's with good plans which might fit in the programme. For further information contact:

NC-IUCN, Secretariat RTR-Programme, Plantage Middenlaan 2B, 1018 DD Amsterdam, Tel.: ++ 31 20 626 1732, fax: ++ 31 20 627 9349, Email: iucnnethcomm@gn.apc.org

Lecture by Dr. Mark J. Plotkin.

In March this year Mark Plotkin visited the Netherlands to promote the Dutch translation of his book "Tales of a Shaman's Apprentice. An ethnobotanist searches for new medicines in the amazon rain forest." On invitation of Foundation BOS, and in collaboration with the Department of Forestry at Wageningen Agricultural University he gave a guest lecture on medicinal uses of tropical forest plants by indians in the forests of the Guyana shield. In his lecture Dr. Plotkin emphasized the value of the Celos Management System for sustained use, including medicinal, of the Amazonian tropical forests. This lecture was attended by 60 persons. Afterwards Dr. Mark Plotkin was presented a certificate by Dr. A.P. van Seters, chairman of Foundation Rainforest

Medical, and Dr. A.G. Voorhoeve, chairman of Foundation BOS, as an expression of gratitude for his work. In response he expressed his willingness to cooperate with both Foundation BOS and Foundation Rainforest Medical. You will probably hear from him in the BOS NiEuWSLETTER.

Publication.

Safeguarding the Goose with the Golden Eggs: function endowment of tropical forests.

Gerdien W. Meijerink, IKC-N/Foundation BOS

The functions of forests are enjoyed on a global scale by many countries. However, these countries do not always share in the costs of preserving tropical forests. In this study, commissioned to Foundation BOS by the National Reference Centre for Nature Management, Wageningen, the question is therefore posed how these countries can contribute to the preservation of tropical forests.

What kind of systems of resource transfers (or "function endowment") from the users of (global) functions generated by tropical forests (generally the industrialized countries, or the North) to the owners of tropical forests (generally the low-income countries, or the South) already exist? Are there other systems conceivable? To tackle the topic properly the study first examines the values of tropical forests, by whom they are used and owned, and how it is paid for its use. It also examines the possibilities to give the various functions an economic price. The study distinguishes two sets of resource transfer mechanisms for use at the national (local) and international level respectively, and reviews the (potential) contribution of these mechanisms to the sustainable conservation and management of tropical forests.

On July 12th the report will be presented to relevant organisations, the BOS members and the press. The presentation will be held in Wageningen in "Hotel de Wereld" and will include e.g. a lecture by Dr. Hueting from the CBS. The presentation starts at 2.30 p.m. Both Ends (Environment and Development Service for NGO's) and the Netherlands Committee for IUCN (World Conservation Union) have already ordered a total of 250 copies for distribution within their networks.

Information on ordering: IKC-N Werkdocument nr. 71, IKC-N, P.O. Box 30, 6700 AA Wageningen. Tel. 08370-74801, Fax: 08370-74930.

Forthcoming.

* NiEuWSLETTER 32:

This issue, to be published end of November, will be a theme-number on forests and forestry in South-East Asia. Contributions from Laos, Vietnam, and Indonesia have already been promised. All persons working in this region are kindly invited to contribute to this theme-number.
The deadline for contributions is set on the 15th of October.

* NiEuWSLETTER 33:

This issue is scheduled to be a theme-number on Suriname. The Government of Suriname is on the brink of awarding forest concessions covering about 25% of the nation's territory to 3 Asian logging companies (MUSA, Berjaya, and Suri-Atlantic). The Nationale Assamblee (the parliament) still has to decide on this plan. However, on national and international level the concern about this plan is growing. Not only are Suriname's forests at stake, but also e.g. the future of the people living in it, the environment, and perhaps the nation's future as well. Given the many ins and outs it is found justified to dedicate a theme-number on this subject.
It is also intended to publish this theme-number in the Dutch language. However, fund raising will be necesarry for this. I am really looking foreward to contributions on this matter. The deadline for this issue is set on the 1st of February 1996.

Note: articles must be written in English. For the Suriname issue both an English and Dutch version would be very much appreciated. The article must not exceed a maximum of 2500 words, and should include at least two illustrations and/or photos.

* Who is who?

In 1987 Foundation BOS executed a desk study called "Forestry Development Cooperation: Profiencies and Potential of Institutions. Part 1: The Educational Sector. In 1988, 1990, and 1992 followed respectively "Forestry Development Cooperation: An Inventory of Dutch Activities. Part 2: The Research Sector.", "Part 3: The Policy Sector", and "Part 4: The Execution Sector." Awaiting final approval by the IKC-N Foundation BOS will be executing a project in order to update and intergrate the 4 sectors. Forestry development cooperation in the Netherlands and the Dutch activities in this field will then be available in a handy and informative manual. Again this study will be financed by the National Refernce Centre for Nature Management of the Ministry of Agriculture, Nature Management, and Fisheries (IKC-N/LNV).

Foundation Rainforest Medical

Stichting BOS

Expression of Gratitude

The Foundation Rainforest Medical
and the Organization for International Forestry Cooperation

express their profound gratitude towards

Doctor Mark J. Plotkin

Ethnobotanist of Conservation International

for his dedication to the Indigenous Peoples
of the Rainforests of the Amazon Basin.

His pioneering research and awareness raising activities concerning Biodiversity and Traditional Medicinal Plant Knowledge command respect.

His approach to Sustainable Multiple Use of the Rainforest for the benefit of Local Peoples and the World Society attracts attention.

His special interest in the application of the Celos Management System underlines the importance and the possibilities of the Concept of Multiple Use.

The Netherlands, March 9, 1995

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Short News.

This column of the BOS NiEuWSLETTER is compiled to give short information of your interest. You are kindly invited to send such information, like short newspaper articles, notes about new books, meetings, symposia or courses.

Meetings

August 1995

Internet Applications and Electronic Information Resources in Forestry and Environmental Sciences. Finland, 1 - 5 August. (Pre-IUFRO World Congress).
Contact: Hannu Saarenmaa, EFI, Torikatu 34, 80100 Joensuu, Finland, Tel.: 358-73-124 395, Fax: 358-73-124 393, E-mail: hannu.saarenmaa@metla.fi.

Afforestation of First Rotation Sites: Production of Appropriate Seedlings, Seedling Establishment and Stand Treatment. Garpenberg & Helsinki, Finland, 1 - 6 August. (Pre-IUFRO World Congress).
Contact: Swedish University of Agricultural Sciences, Att.: Anders Mattsson, Dept. of Forestry Yield Research, S-776 98 Garpenberg, Sweden.

Research on Environmentally Sound Forest Practices to Sustain Tropical High Forests. A meeting associated with the IUFRO World Congress. Kotka, Finland, 3 - 6 August.
Contact: R. Heinrich, Chief Forest Harvesting & Transport Branch, FAO, Via delle Terme di Caracalla, 00100 Rome, Italy, Tel.: +39-6-57 97 47 27, Fax: +39-6-57 97 51 37.

XXth IUFRO World Congress: "Caring for the Forest: Research in a Changing World" Tampere, Finland, 6 - 12 August.
Contact: Prof. Risto Seppälä, Finnish Forest Research Institute, Unioninkatu 40 A, SF-00170 Helsinki, Finland. Tel.: 358-0-857-051, Fax: 358-0-625-308. Internet: IUFRO95metla.fi.

September 1995

International symposium: Innovation of Tropical Tree Seed Technology. Arusha, Tanzania.
Contact: A.G. Kalaghe, P.O. Box 4012, Morogoro, Tanzania, Tel.: 255-56-3192, Fax: 255-56-3275.

October 1995

Resource Inventory Techniques to Support Agroforestry Activities. Palampur Himacmai Pradesh, India, October. Sponsored by IUFRO and ISTF.
Contact: Dr. Atul, Department of Agroforestry and Environment, H.P. Agriculture University, Palampur 176062 Dist. Kangra (H.P.), India, Tel.: 01894-2614, Fax: 01894-2259.

Symposium on Advances in Forest Seed Production in Latin America. Turrialba, Costa Rica, 16 - 20 October.
Contact: Dr. R. Salazar, PROSEFOR Project, CATIE, 7170-137 Turrialba, Costa Rica, Fax: 506-556 1533.

International Seminar on Income Generation through Community Forestry. Maruay Garden Hotel, Bangkok, Thailand, 18 October - 20 October.
Contact: Dr. Somsak Sukwong, Director RECOFTC, Kasetsart University, P.O. Box 1111, Bangkok 10903, Thailand, Tel.: (662) 579-0108, Fax: (662) 561-4880.

Soils of Tropical Forest Ecosystems. Balikpapan, Kalimantan, Indonesia, 30 October - 3 November.
Contact: Andreas Schulte/Daddy Ruhiyat, Faculty

of Forestry, Mulawarman University, P.O. Box 1227, Samarinda 75123, East Kalimantan, Indonesia, Tel.: 62-541-35089, Fax: 62-541-35379.

November 1995

VII Latin American Symposium of Remote Sensing. Puerto Vallarta, Mexico. Contact: Roman Alvarez, SELPER-Mexico, Apto. Postal 20-850, 01000 Mexico, D.F., Mexico, Tel.: 525-622-4339, Fax: 525-616-2145, E-mail: rab@igiris.igeograf.uanm.mx.

Fire Management and Natural Resource Development in Latin America and the Caribbean. Guadalajara, Mexico, 5 - 11 November.
Contact: A. Koonce, Project Leader, Prescribed Fire Research, USDA Forest Service, Pacific SW Station, Forest Fire Laboratory, 4955 Canyon Crest Drive, Riverside, CA 92507-6071, USA, Tel.: +1-909-276 65 70, Fax: +1-909-276 64 26.

1996

How to Gather, Evaluate, and Use Ethnobiological Data. Bangkok, Thailand. Contact: Gyde Lund. USDA Forest Service, FIERR, P.O. Box 96090, Washington, DC 20090-6090 USA, Tel.: 1-202-205-1147, Fax: 1-202-205-1087, E-mail: fswa/s=g.lund/ou=w01c@mhs.attmail.com.

February 1996

Inventory of Non-Timber Forest Products. Nairobi, Kenya, 19 - 23 February.
Contact: August B. Temu, ICRAF, United Nations Ave. Gigiri, P.O. Box 30677, Nairobi, Kenya, Tel.: 254-2-521-450, Fax: 254-2-521-001, E-mail: CGNET CGI:236.

Courses

10 July - 29 September 1995

Desarrollo de Sistemas Agroforestales
The course objectives are: to describe the structure and functioning of agroforestry systems, to evaluate the productivity and appropriateness of use under different physical and socio-economic conditions, to design agroforestry systems, to prepare implementation plans, and to characterize and evaluate the systems.
Location: CATIE, Turrialba, Costa Rica.
Contact: Programa de Enseñanza para el Desarrollo y la Conservación del CATIE, Turrialba, Costa Rica. Apdo. Postal 7170. Tel.: (506) 556 1016, Fax: (506) 556 1533, E-mail: capacita@catie.ac.cr

12 July - 28 September 1995

Research Methods in Forestry.
Forest research includes the dimensions of space and time, in that much research takes place in widely-scattered localities and many investigations are long-term. Such research is only likely to be successful if it is well-designed, well-conceived, regularly-visited and effectively recorded. The course is aimed at experienced professionals who wish to acquire new skills and to catch up with new ideas and technologies in statistics, computing and forestry research. By the end of the course, participants should be: * able to organise and administer a research project, * familiar with modern techniques of literature retrieval, * able to write an experiment plan, * able to design, analyse and interpret a range of experiments or surveys, * competent in handling data on a microcomputer, * able to use statistical packages on microcomputers, and * able to present the results of research in the form of a paper or report.
Location: Reading. Costs: £ 5000. Contact: Mrs. Helen Stutley, Administrator, Statistical Service Centre, Harry Pitt Building, University of Reading, P.O. Box 240, Reading, Berkshire RG6 2FN, United Kingdom, Tel.: +44 734 318025, Fax: +44 734 753169, E-mail: statistics@reading.ac.uk.

25 July - 4/18 September 1995

Monitoring and Evaluation of Social Forestry and Natural Resources Development Projects. Applications of Management Information Systems in forestry.
Reforestation Planning and Plantation Establishment and Management.
All courses, and many others, are organized by The Institute of Forest Conservation.
Contact: IFC, The Director, College of Forestry, P.O. Box 434, College Laguna 4031, Philippines, Tel.: 63-94-2268, Fax: 63-94-3340.

25 July - 4 September 1995

Forest Community Development Course.
The course covers five modules designed to build up the capability of the participants to formulate and manage a forest community development program or project. It focuses heavily on the community development process as the major intervention. Location: Laguna, Philippines. Language: English. Costs: US$ 3,600. Contact: IFC, the Director, P.O. Box 434, College, Laguna 4031, Philippines, Tel.: 63-94-2268, Fax: 63-94-3340.

25 July - 18 September 1995

Reforestation Planning and Plantation Establishment and Management.
The course is intended to develop/enhance the technical and management capabilities of people who are/will be engaged in reforestation or establishment of tree plantation. It deals with the principles and techniques of conducting bio-physical and socio-economic surveys, preparation of reforestation plans, species selection, production of planting stocks, and establishment, development and protection of the plantation. Location: Laguna, Philippines. Language: English. Costs: US$ 4,400. Contact: IFC, the Director, P.O. Box 434, College, Laguna 4031, Philippines, Tel.: 63-94-2268, Fax: 63-94-3340.

14 August - 18 August 1995

Taller manejo productivo de los manglares en América Central.
The objectives of this course are: 1) to get familiar with and analyze experiences with the development of production activities associated with mangroves, 2) to strengthen the chain between institutions related with management of natural resources, environment and research and the exchange of information between regional professionals involved with managment of mangroves, 3) to promote the sustainable use of mangroves.
The course is organized by CATIE, Rosenstiel School of marine and Atmosphere Sciences (University of Miami), and Programa Regional de Humedales (UICN).
Participants must be involved in management of mangroves.
Costs: US$ 300. Language: Spanish. Location: León, Nicaragua. Information: Dirección, **Taller manejo productivo de manglares,** Proyecto Manglares, 7170 CATIE. Turrialba, Costa Rica. Tel: (506) 556 6882, Fax: (506) 556 1533, E-mail: xrobles@catie.ac.cr or olafo@catie.ac.cr.

3 September - 8 December 1995

International Course on Local Level Management of Trees and Forests for sustainable Land Use.
The course aims to strengthen national capacities to design, implement, and evaluate community forestry activities within the framework of rural development. The course includes lectures, audio-visuals, discussions, group work, exercises, participant's presentations, technical field excursions, and fieldwork. The course is designed for programme officers engaged in policy formulation or in the design, management, implementation, and evaluation of rural development programmes. After completion of the course, participants will have acquired: * knowledge on approaches and methods, new developments, experiences and approaches in community forestry and in rural development projects in the field of community forestry, * skills to design community forestry programmes and analyse the situation of different parties involved. Location: International Agricultural Centre (IAC),

Wageningen, The Netherlands. Costs: Fl. 6,000,-. Contact: IAC, P.O. Box 88, 6700 AB Wageningen, The Netherlands, Fax: 31-8370-18552

4 September - 29 September 1995

Environmental Assessment for Development Projects.
A course for resource planners, project managers and technical experts to develop effective skills in environmental assessment for use in project planning and management. Language: English. Costs: A$ 8,200 (inclusive all meals and accommodation). Location: Canberra, Australia. Contact: Mr. George Collet, Forestry and Environment Division, ANUTECH Pty Ltd, Canberra ACT 0200, Australia, Fax: 61-6-249 5875.

5 September - 16 October 1995

Social Forestry Officers Development Course.
The course is designed to reinforce management capabilities of development agents in integrating forestry with socio-economic development schemes of rural communities. Location: Laguna, Philippines. Language: English. Costs: US$ 3,600. Contact: IFC, the Director, P.O. Box 434, College, Laguna 4031, Philippines, Tel.: 63-94-2268, Fax: 63-94-3340.

18 September - 6 October 1995

Resolution of Conflicts in the Management of Natural Resources.
In this course, appropriate methodologies for resolving conflicts in the management of resources and conservation areas will be examined. A variety of case-studies and resolution options will be presented. Language: Spanish. Costs: US$ 2,300. Location: Colón, Costa Rica. Contact: Sr. Felipe Matos, Programa de Recoursos Naturales, Universidad para la Paz, Apdo. 138, 6100 Ciudad Colón, Costa Rica, Fax: 506-249 1929.

16 October - 8 December 1995

Forestry Planning and Management.
A course for foresters and rural development workers to extend their skills in sustainable forest management, project design and implementation, monitoring and evaluation, forestry economics and participatory community forestry. Language: English. Costs: A$ 14,000 (inclusive all meals and accommodation). Location: Canberra & Gympie, Australia. Contact: Mr. George Collet, Forestry and Environment Division, ANUTECH Pty Ltd, Canberra ACT 0200, Australia, Fax: 61-6-249 5875.

30 October - 24 November 1995

Training Course in Community Forestry Extension.
This course is designed to provide middle management personnel in forestry departments and community forestry programs with the skills required to determine the needs of rural communities and to foster and incorporate local communities' participation in forest management. Course topics include: the role of the extension agent in participatory community forestry, principles of extension, what and who to extend, extension methods and education, communication, gender in forestry, participatory planning, evaluation and monitoring, and microteaching. The course includes lectures, guided reading, practical exercises, field trips, and field exercises. Location: Bangkok, Thailand. Costs: US$ 3,950. Closing date for application: 15 September 1995. Language: English. Contact: Dr. Somsak Sukwong, Director RECOFTC, Kasetsart University, P.O. Box 1111, Bangkok 10903, Thailand, Tel.: (662) 579-0108, Fax: (662) 561-4880.

6 November - 17 November 1995

Foresteria Comunitaria.
Objectives of the course are: -define concepts and methods of community forestry aimed at sustainable forest production, -Establish capacity and tools for community organization/forestry, -exchange knowledge on forestry of farmers and indigenous peoples.

Contact: Programa de Enseñanza Area de Capacitación, CATIE 7170, Turrialba, Costa Rica. Tel.: (506) 556 1016/556 6431, Fax: (506) 556 1533/556 0914, E-Mail: capacita@catie.ac.cr.

6 November - 24 November 1995

Los Arboles y la Sostenibilidad de los Agroecosistemas: aspectos biologicas, economicos y socioculturales.
Objectives: strengthen the knowledge on the role of trees for sustainability, by means of visits to projects in Costa Rica and discussions with participants in the filed of sustainable land use. Contact: Universidad para La Paz, Apdo. 138, 6100 Ciudad Colón, Costa Rica, Fax: 506-249 1929.

27 November - 1 December 1995

Small-scale processing of honey and beeswax.
The course consists of two days small-scale honey processing and marketing, one day of study visits, and two days of beeswax processing and small-scale manufacture of secondary beeswax products. Deadline for application: 30 September 1995. Location: Arusha, Tanzania. Costs: US$ 270 for participants from of developing countries, US$ 550 for participants from wealthy countries or with a sponsor. Contact: Njiro Wildlife Research Centre, P.O. Box 661, Arusha, Tanzania, Fax: 255(0) 57 8240, Tel.: 255(0) 57 7677.

8 January - 19 January 1996

Training Course in Conflict Resolution in Forest Resources Management.
The course, in collaboration with RESOLVE (an independent program of WWF, USA) will provide participants with skills to analyse a conflict before negotiations begin, set goals and plan strategy, decide whether negotiation is an appropriate strategy, understand and make the best use of their own negotiating style, enhance communication ability, avoid or resolve an impasse. The course consists of lectures, practical exercises, interactive discussion, group work and presentations. Location: Bangkok, Thailand. Costs: US$ 1,650. Closing date for application: 30 November 1995. Language: English. Contact: Dr. Somsak Sukwong, Director RECOFTC, Kasetsart University, P.O. Box 1111, Bangkok 10903, Thailand, Tel.: (662) 579-0108, Fax: (662) 561-4880.

10 January - 1 March 1996

Logging Systems and Harvest Planning.
This course is aimed at persons responsible for carrying out forestry operations. Participants receive instruction and practical applications on forest engineering procedures for logging systems operations and planning, transportation system analysis and management, operations analysis and forest roads, soils and watershed management analysis and economics. Language: English. Costs: US$ 3,000. Location: Oregon, USA. Contact: Dr. Loren Kellogg, Course Director, Dept. of Forest Engineering, Oregon State University, Corvallis OR, USA, Fax: 1-503-737 4316, E-mail: KellogL@ccmail.orst.edu.

12 February - 16 February 1996

The Management of African Bees.
This 5 day course deals with simple, seasonal management of African honeybees, consisting of three days of lectures and demonstrations and two days of study tours. Deadline for application: 15 December 1995. Location: Arusha, Tanzania. Costs: US$ 240 for participants from of developing countries, US$ 480 for participants from wealthy countries or with a sponsor. Contact: Njiro Wildlife Research Centre, P.O. Box 661, Arusha, Tanzania, Fax: 255(0) 57 8240, Tel.: 255(0) 57 7677.

11 March - 29 March 1996

Training Course in Marketing of Non-Timber Tree and Forest Products.
The course is designed to provide middle management personnel in forestry departments and community forestry programs with the for identifying potential products, assessing the impact of policy on market channels, distribution generated by non-timber products, the relationship between off- and on-farm tree resources, and the impact of product marketing of sustainable forest conservation. Location: Bangkok, Thailand. Costs: US$ 3,800. Language: English. Closing date for

application: 31 January 1996. Contact: Dr. Somsak Sukwong, Director RECOFTC, Kasetsart University, P.O. Box 1111, Bangkok 10903, Thailand, Tel.: (662) 579-0108, Fax: (662) 561-4880.

18 March - 3 April 1996

Forest Genetics and Tree Improvement. This course deals with various items, e.g.: -World Forestry Trends; -Genetic Basis for Tree Improvement; -Tropical Hardwoods and Multi-Purpose Tree Species: distribution and seed collection; -Mexican and Central America Pines; -Initiating Tree Improvement Programs of Indigenous and Exotic Species; -Seed Orchards; -Eucalypts/Gmelina/Acacia; -Progeny Genetics; -Quantative Genetics; -Breeding Strategies; -Propagation Strategies; -Field Trips to Sites if Interest. The official language will be English. Location: North Carolina State University, Raleigh, USA. Contact: Ann Coughlin, North Carolina State University, College of Forest Resources, Box 8001, Raleigh, NC 27695-8001 USA, Tel.: (919)515-3184, Fax: (919)515-3687.

November - December 1996

4th International Course on Fodder Tree Legumes - Multipurpose Species for Agriculture. This 6 week course is specifically aimed at people interested in using multipurpose tree legumes for: - improving forage availability in small-holder livestock systems, - developing sustainable agroforestry farming practices, - rehabilitating degraded lands. The course consists of a 2 week series of lectures, demonstrations, and practical classes, followed by a 4 week period of field tours during which additional course instructions will take place associated with field inspections. The major course themes are: - origins and characteristics of the fodder tree legumes, - environmental adaption of tree legumes, agronomy and management of tree legumes, - role of tree legumes in animal production, - role of tree legumes in agroforestry, - and programs for soil fertility improvement and erosion control. Language: English. Costs: A$ 12,000. Location: Brisbane, Queensland, Australia. Contact: Fodder Tree Legumes, Course Secretariat, Dept. of Agriculture, University of Queensland, St Lucia, Queensland 4072, Australia, Tel.: 61 7 365 2062, Fax: 61 7 365 1188.

Publications

Preparing to Plant Tropical Trees. Alan Longman. Tropical Trees Propagation and Planting Manuals. Volume 4. Commonwealth Science Council.

This manual is concerned with key choices that lie between propagation of good planting stock, and its planting and successful establishment. Issues include: good communication between all interested parties, an understanding of how tropical ecosystems function, consideration of the type of planting site, the choice of which groups of tree species to plant, the decision on a suitable growing system for the young trees, and preparation of the site for planting.

The manual contains sections on * general principles of tree survival, * deciding on the growing system, * choosing the most appropriate tree species * types of planting site * preparing the ground and * sources of further information. It is recommended for anyone who wishes to understand the interaction between tropical trees and the environment, to plant tropical trees successfully and to learn how the land may be managed sustainably.

Information on ordering: Commonwealth Secretariat Publications, Marlborough House, Pall Mall, London, SW1Y 5HX, UK. ISBN: 0850924189. Price: £30, £24 for students/purchasers from developing countries.

Boletín BOLFOR
Proyecto de Manejo Forestal Sostenible.

This newly established Spanish periodical deals with sustainable forestry management in Bolivia in general and the BOLFOR project in particular. The project as well as the periodical are financed by the Government of Bolivia, USAID and FONAMA.
For further information contact: John Nittler, BOLFOR, Prolongación Beni #149, Casilla #6204, Santa Cruz, Bolivia, Fax: 591-3-364319, Tel.: 364704-364696, E-mail: BOLFOR@UGRM.BO

Forest Management in Indonesia.
Bosbeheer in Indonesië.
Erik Wakker. Vereniging Milieudefensie, Novib, Both ENDS, Stichting Greenpeace Nederland, INDOC, Skephi.

The report deals with the promotion activities of the Indonesian Forestry Community (IFC). The eight most used IFC quotes are discussed and analysed. Furthermore the most important aspects of Indonesian forest management are dealt with.
Information on ordering: Vereninging

Milieudefensie, Damrak 26, 1012 LJ Amsterdam, Tel.: 020-6221366, Fax: 020-6275287. Price: Dfl. 6.50.

Restoration Forestry. An International Guide to Sustainable Forestry Practices.
Michael Pilarski. Kivaki Press.

Sustainable forestry is forest resource management which mimics the natural cycles, systems, and species compositions of a forest in all of its wild, undeveloped complexity.

This book is a very comprehensive, up-to-date resource book on sustainable forestry. The book represents a distillation of Friends of the Trees' tremendous educational efforts as global teaching and information clearinghouse for the past 15 years into a thoroughly researched and indexed reference manual. Restoration Forestry brings together over 50 articles from professional foresters, ecologists, and resource planners at innovative research centres around the world. It provides actual insights from ongoing forest ecosystem restoration projects in North and Latin America, and Asia. It also includes an exhaustive review of 780 forestry organizations, 230 journals/ periodicals, 800 books and information resources, 100 restoration forestry model projects, 100 companies selling certified "sustainably produced" wood products, 120 universities/colleges offering degrees in forestry, 90 governmental forest agencies, 100 directories for researchers and networkers' use, and addresses, telephone, and fax numbers for the majority of these references.

Information on ordering: Friends of the Trees Society, P.O. Box 1064, Tonasket, WA 98855. Tel./fax: (509) 485-2705. Price: $26.95 (exclusive shipping and handling costs).

Land-use Options for the Singkil Swamp, Aceh, Indonesia.
W.H. Diemont. IBN Research Report 95/2.

The Integrated Conservation and Development Project (ICDP) envisages to integrate conservation and regional development in Sumatra, through preserving a representative sample of the original biodiversity of the Northern part of Sumatra. In a follow-up project, the Leuser Development Programme it is envisaged to conserve the so-called Leuser Ecosystem, a surface of over 2 million ha with the highest biodiversity in the world.

The programme is expected to boost economic development in Sumatra Udara through conserving the Leuser Ecosystem and facilitating improvement of the infrastructure, development of tourism, and intensification of agriculture in the region.
The present study was undertaken to assess development options for the Singkil swamp, which may become an important part of the Leuser Ecosystem.

Information on ordering: IBN-DLO, P.O. Box 23, 6700 AA Wageningen, The Netherlands. Price: Dfl. 20,-. Prepayment required. Postal account: 948540. Only mention the report number(s) desired.

Potential for Sago Palm in Buffer Zones in Aceh Selatan, Indonesia.
W.H. Diemont & D.L. Schuiling. IBN Research Report 95/3.

The possibilities of market-oriented industrial starch production from sago palm in the Regency (Kabupaten) Aceh Selatan have been investigated on request of the Integrated Conservation and Development Project (ICDP) in Medan, Indonesia.

In Aceh Selatan, sago palm is considered as a crop for planting in buffer zones, supporting the conservation of the ecological and biological integrity of forest land.

The focus of the present study is on 1) the availability and suitability of land for sago palm in envisaged buffer zones, and 2) raw material costs for sago starch production.

Information on ordering: IBN-DLO, P.O. Box 23, 6700 AA Wageningen, The Netherlands. Price: Dfl. 20,-. Prepayment required. Postal account: 948540. Only mention the report number(s) desired.

Techniques and Methods of Ethnobotany.
D.R. Given and W. Harris. Commonwealth Science Council.

This manual presents information which defines ethnobotany, discusses the subject's philosophy and principles, and considers the relationships between ethnobotany and the conservation of biodiversity. It includes a guide to carrying out ethnobotanical research, and points to the means by which new plants can be brought into cultivation and domestication, so that their uses can be enhanced in sustainable ways.

Information on ordering: Commonwealth Secretariat Publications, Marlborough House. Pall Mall, London, SW1Y 5HX, United Kingdom. Price: £ 9.50.

The Comparative Effectiveness and Evaluation Efforts of EU Donors.
P. Hoebink. NAR.

There are many factors that influence aid-effectiveness, ranging from policies of the aid-receiving country to donor motives and bureaucratic procedures. Up till now evaluations and studies on the effects of foreign aid do not provide adequate enough data to come to firm and unambiguous conclusions other than expert judgements. This paper tries to come to some conclusions on aid-effectiveness on basis of the existing scientific literature and of a comparison of recent evaluations of European donors. Based on this material an overview is given of evaluation practices and suggestions for the improvement of evaluation research by European Donors.

Information on ordering: National Advisory Council for Development Cooperation (NAR), Ministerie van Buitenlandse Zaken, Bezuidenhoutseweg 67, Postbus 20061, 2500 EB Den Haag, Tel.: 070 - 3486060, Fax: 070 - 3486256.

Styles of Farming and Forestry: the case of the Mexican community of Cuzalapa.
Peter Gerritsen.

Diversity (or heterogeneity) in agriculture, and the role of trees and forests in farming practice, are the central issues of this report, and are studied by using the farming style concept as methodology. This style refers to a specific structuring of the labour process; it aims at understanding the underlying patterns of farming practice. Tree and forest activities, which take place not only at household, but also at community and national levels, form part of the farming practice.

The research was carried in the indigenous community of Cuzalapa in the biosphere reserve Sierra de Manantlán in West Mexico, an area that belongs to one of the most marginalized regions of Mexico. Government programmes have neglected these regions leading to severe social, economic, political, and ecological problems.

Peasants in Cuzalapa distinguish one regional farming style, which is characterised by maize and bean growing practices, by extensive cattle-raising practices, and by a number of forestry practices. Four farmer types have emerged: landless farmers, cultivators, cultivators with some cattle, and cattle-raising farmers. Aces to factors of production and non-factor products differ between, but also within, the four types. At village level, exchange mechanisms exist which enable peasants to obtain necessary factors of production or non-factor inputs. To fully understand the differentiation, one has to look at the land tenure situation and the social-economic differentiation in the community. Also a number of location-specific factors play a role.

The current economic crisis has made the situation of the landless farmers, the cultivators, and the cultivators with some cattle more difficult.

Peasants distinguish 3 major land-use types with trees and forests: cultivation fields, home gardens and man-made forests, and agostadero land (lands were the animals graze, varying from pasture to forest lands). Forest exploitation has been a major source of conflict in the past, leading to the current situation in which tree and forest utilization is limited to domestic use. Utilization differs between the 4 types of farming and partly reflects the socio-economic situation of the peasants.

To fully understand tree and forest utilization and management, one has to look also at the tree tenure situation. At household, village, and national levels, there are rules and consequently control structures to regulate tree and forest utilization and management.
Tree and forest management practices play only a supporting role to the other farming activities of the peasants. These practices are not aimed at the active management of tree and forest resources for their protective and productive roles. Furthermore, the role of forestry differs for the 4 types of farming, which is partly related to the level of incorporation. Peasants experience pressure on their natural resources, although this pressure is not the same for the different types of farming.

The role of the farming style concept for social forestry programmes is twofold. In general, it can contribute to a better understanding of forestry as a part of the whole range of farming practices. More specifically, with respect to buffer zone management, it provides thorough insights into the strategies of farmers, and the processes which influence their actions. Interventions then can be tuned more appropriately to the specific situations of the different farmers. In this way, (indirectly) conservation, but also social, objectives can be achieved in a more appropriate way.

Information on ordering: Circle for Rural European Studies (CERES), Wageningen Agricultural University, Library, P.O. Box 9100, 6700 HA Wageningen, the Netherlands. ISBN: 9067543691.

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