

Unravelling the complexity

An ITTO project has been investigating strategies for sustainable forest management in Cameroon

by B. Foahom¹,
W.B.J. Jonkers² and
P. Schmidt³

¹Institute of Agricultural Research
for Development
PO Box 219, Kribi, Cameroon
tropenboscameroon@compuserve.com

²Wageningen University/
Tropenbos-Cameroon Program
PO Box 342, 6870 AH
Wageningen, the Netherlands
Wyb.Jonkers@msc.bosb.wau.nl

³Tropenbos-Cameroon Program
PO Box 219, Kribi, Cameroon
tropenboscameroon@compuserve.com



Stumped: Reduced impact logging is possible in Cameroon, despite the large size of most timber trees. Photo: B.S. van Gernerden

THE Tropenbos-Cameroon Program (TCP) is a problem-oriented research program carried out under the joint responsibility of the Cameroonian Ministry of Environment and Forests and the Netherlands-based Tropenbos Foundation. ITTO PROJECT PD 26/92: 'Development of methods and strategies for sustainable management of moist tropical forest in Cameroon', which started in 1994 and has just ended, was developed to undertake some of the elements of this program.

The main implementing agencies were the Cameroon Institute of Agricultural Research for Development, the Cameroon National Office for Forest Development (ONADEF) and the Forestry Department of Wageningen University in the Netherlands. These three institutes cooperated with other research institutes and universities in Cameroon and the Netherlands. The general objective of the project was to

contribute to the sustainable management of tropical rainforests in Cameroon through research, training and education.

The site chosen to carry out the research is located about 80 km east of Kribi in South Cameroon. It covers about 170 000 hectares and has some 15 000 inhabitants. The timber company Wijma-Douala SARL, a partner in the project, logged part of the area before 1992 and continued to harvest timber during the implementation of the project.

Based on a rapid rural appraisal in the area, during which representatives of all stakeholders were interviewed, 14 research projects were formulated for the TCP (see Foahom

& Jonkers 1992), of which six were carried out within the framework of ITTO PROJECT PD 26/92. The scope of the study included the three dimensions that form the mainframe of any sustainable forest management strategy: the social, ecological and economic dimensions. An interdisciplinary approach was adopted to execute the six interrelated sub-projects.

To test the applicability of the TCP research results, ITTO requested that a forest management plan be prepared for a production forest in the research area. To emphasise the importance of both strategic and tactical planning, a master management plan was prepared as a tool for land use planning and a forest management plan was prepared to govern forestry activities.

Three regional workshops and an international symposium were key elements in a framework for disseminating results to the Cameroonian and international forestry communities (Foahom et al. 2001; Jonkers et al. 2001). Table 1 shows that the project generated a large number of published outputs.

Results

Ecologically sound

TCP scientists conducted wide-ranging ecological research under the project. For example, Jonkers (2000) and Jonkers and van Leersum (2001) assessed the extent to which reduced impact logging could be applied in the area, and guidelines for improved logging techniques and increased logging efficiency were developed. Waterloo et al. (2000) determined that the construction of roads and tracks should be avoided or minimised on slopes steeper than 10° to prevent excessive erosion. Other research showed that

The project found that about 15% of harvestable timber was not harvested in the Wijma concession and only 70% of timber felled was actually delivered to the sawmill.

improved planning, training and control could substantially reduce the area disturbed by skid trails and landings. On the other hand, Parren and Bongers (2001) found that liana-cutting before the harvest did not reduce the size of canopy gaps in these Cameroonian forests. Bongjoh and Nsangou (2001) recommended that gap size should not exceed 1 300 m² to ensure that the composition of tree species does not change—that is, that valuable timber species are not replaced by fast-growing secondary species.

These and other studies conducted under the project helped to illuminate the issues of concern to local people that must be taken into account when developing strategies for sustainable forest management ...

Economically viable

More LKS, which was originally developed under ITTO PROJECT PD 18/87, was revised under the project (Zijp et al. 1999). This is a software package designed to provide timber producers and consumers with information on potential end-uses for so-called lesser-known species (LKS). By adding 26 LKS timber species and a number of new potential end-uses, the revised package has been strengthened as a tool for promoting the use of a wide range of species in Cameroon's domestic and export markets and thereby increasing the potential income to be earned from sustainable forest management.

Income could also be increased by reducing waste. The project found that about 15% of harvestable timber was not harvested in the Wijma concession and only 70% of timber felled was actually delivered to the sawmill.

A draft master management plan was developed with the aim of accommodating the conflicting needs of forest users and using the forest according to its capacity to fulfil its multiple functions; this formed a useful resource in the participatory process.

Socially acceptable

Surveys conducted by the project demonstrated that non-timber forest products (NTFPs) were very important for the local population. Indeed, over 500 species of flora and 280 species of fauna were documented as being used in the area (van Dijk 1999). Although most of these are used for household consumption, some are collected for commercial purposes even if the level of commercialisation is still low. Some of the harvesting techniques used by the local population are not conducive to sustainable use. Moreover, the impacts of logging activities on the availability of many NTFPs can be significant. Management prescriptions are needed for those useful trees and plants threatened by commercial logging. The dual aim of raising the income of local people by increasing NTFP extraction and improving

forest conservation can be achieved by domesticating NTFPs and integrating them in improved farming systems.

These and other studies conducted under the project helped to illuminate the issues of concern to local people that must be taken into account when developing strategies for sustainable forest management (van den Berg & Biesbrouck 2000). Important considerations include:

- the variation in perceptions of the forest among and within ethnic groups;
- the profound changes in local use of forest resources as a consequence of new technologies and changing market values;
- the local traditional right to use (parts of) the forest; and
- the leadership structure of the local population.

The written word

Table 1: Documents produced within the framework of Project PD 26/92

Form of publication	Number of publications
Seminar proceedings	2
T-C series	3
T-C documents	6
T-C reports	7
Student reports	60
Total	78

T-C series = Tropenbos-Cameroon series (or PhD theses and more elaborate research documents); T-C documents = Tropenbos-Cameroon documents (management plans etc); T-C reports = Tropenbos-Cameroon reports (practically oriented results)

An understanding of such factors is critical for the development of an effective participatory decision-making process for master management plans or forest management plans in which all stakeholders discuss issues as equals. Using data on soil, vegetation and other factors, the project generated land-use suitability maps for the TCP research area. These proved extremely useful in the decision-making process. Two workshops were held to discuss and decide on the approach to be adopted in management planning. A draft master management plan was developed with the aim of accommodating the conflicting needs of forest users and using the forest according to its capacity to fulfil its multiple functions; this formed a useful resource in the participatory process. From this master plan a forest management plan was derived for a production forest of 18 000 hectares.

Capacity building

The project proved valuable in giving Cameroonian foresters and forest researchers experience in sustainable forest management, research and participatory processes. Nine Cameroonian researchers worked on the project for two or more years; two are now finalising their PhD theses. In addition, about 60 mostly Cameroonian students wrote masters' or bachelor's theses based on activities conducted under the project.

Conclusion

Tropical forest is characterised by many interacting components. Notwithstanding some unavoidable gaps, the

scientifically sound tools developed by ITTO PROJECT PD 26/92 are likely to go a long way in boosting the technical capacity for the sustainable management of southern Cameroon's tropical rainforests. However, research findings contribute nothing to sustainability if they are not applied. Given the high level of stakeholder interest in the project, it is expected that many of the findings will be integrated into the framework of the new Cameroonian forest policy.

References

van den Berg, J. & Biesbrouck, K. 2000. *The social dimension of rainforest management in Cameroon: issues for co-management*. Tropenbos-Cameroon Series 4. Tropenbos-Cameroon Program, Kribi, Cameroon.

Bongjoh, C. & Nsangou, M. 2001. Gap disturbance regimes and regeneration dynamics of commercial timber tree species in a southern Cameroon forest. In: Jonkers, W., Foahom, B. & Schmidt, P. (eds.). *Seminar proceedings 'Sustainable management of African rain forest', held in Kribi, Cameroon, November 1999. Part II. Symposium*. Tropenbos Foundation. Wageningen, the Netherlands.

van Dijk, J. 1999. *Non-timber forest products in the Bipindi-Akom II area, Cameroon*. Tropenbos-Cameroon Series 1. Tropenbos-Cameroon Program. Kribi, Cameroon.

Foahom, B. & Jonkers, W. 1992. *A programme for Tropenbos research in Cameroon*. Tropenbos Foundation. Wageningen, the Netherlands.

Foahom, B., Jonkers, W., Nkwi, P. & Schmidt, P. (eds.). *Seminar proceedings 'Sustainable management of African rain forest', held in Kribi, Cameroon, November 1999. Part I. Workshops*. Tropenbos Foundation. Wageningen, the Netherlands.

Jonkers, W. (ed.) 2000. *Logging, damage and efficiency: A study on the feasibility of reduced impact logging in Cameroon*. Tropenbos-Cameroon Report 00-3. Tropenbos-Cameroon Program. Kribi, Cameroon.

Jonkers, W. & van Leersum, G. 2001. Logging methods in south Cameroon: methods and opportunities for improvement. *International forestry review* 2:1, 11–16.

Jonkers, W., Foahom, B. & Schmidt, P. (eds.). *Seminar proceedings 'Sustainable management of African rain forest', held in Kribi, Cameroon, November 1999. Part II. Symposium*. Tropenbos Foundation. Wageningen, the Netherlands.

Parren, M. & Bongers, F. 2001. Does climber cutting reduce felling damage in southern Cameroon? *Forest ecology and management* 141, 175–188.

Waterloo, M., Ntonga, J., Dolman, A. & Ayangma, A. 2000. *Impact of shifting cultivation and selected logging on the hydrology and erosion of rain forest land in south Cameroon*. Tropenbos-Cameroon Documents 3. Tropenbos-Cameroon Program. Kribi, Cameroon.

Zijp, M., Polman, J. & Tongo Bokam, T. 1999. *More LKS: Manual for a computer programme on Cameroonian lesser-known timbers and end-use requirements*. Tropenbos-Cameroon Documents 2. Tropenbos-Cameroon Program. Kribi, Cameroon.

ITTO PROJECT PD 26/92 was financed through ITTO by the governments of Japan, Denmark and the USA and the Common Fund for Commodities. The Government of Cameroon through its implementing agencies, the Tropenbos Foundation, Wageningen University, Leiden University and Alterra provided in-kind support.



Tall timber: Tali (*Erythrophloeum ivorense*) is a common timber tree in the area studied by under the Tropenbos-Cameroon Project. Photo: B.S. van Gernerden