

Miombo woodland utilisation by smallholders in Handeni / Tanzania: Strategies for income generation

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(i) Problem addressed:

“**Miombo**” comprises those ecosystems in the seasonal tropics dominated by trees of the closely related genera *Brachystegia*, *Julbernardia* and *Isoberlinia* (subfamily Caesalpinioideae, family Fabaceae - the legumes). Miombo woodland is the dominant vegetation type of the Central African plateau (Tanzania, D.R.Congo, Zambia, Malawi, Angola, Zimbabwe and Mozambique). Functionally similar ecosystems with *Isoberlinia* often dominant, but lacking *Brachystegia* and *Julbernardia*, occur in the Guinea savannas of West Africa. About 40 Mio people depend on Miombo woodlands directly, plus 15 Mio people indirectly on firewood. Human activities are pivotal in the dynamics of miombo. (Miombo Network; Campbell. Miombo)

In Tanzania about 48 % of the land surface is covered with Miombo woodlands. They are a settlement area for small scale farmers and cattle-breeders. Although the population is sparse, the area covered by Miombo is decreasing rapidly. In many regions dominated by Miombo, deforestation is mainly caused by small scale farming together with the increasing activities of professional charcoal miners and the establishment of plantations (teak, tobacco, sisal, cotton and others), settlement areas or hydrology engineering projects. In the research area, Handeni, however, the degradation mainly results from forest fires connected with shifting cultivation, hunting, and other factors. The yield of traditional management of these ecosystems is not longer sufficient to cover the needs for food supply and cash crop of the growing rural population.

(ii) Research question/hypothesis: The study is based on the assumption that the know-how about the multiple use of Miombo woodlands is a base for further development of proper resource utilisation systems. A consequently integrated management using agro-forestry systems considering timber and non timber products of trees and shrubs should influence the economic and social situation of people in this area in a positive way. Non wood forest products (NWFP) which on the one hand contribute to the subsistence of single families, on the other hand can be marketed and serve as a source of income, should rise the prestige of that forest type in the awareness of the local users.

(iii) Objective of research: Based on these presumptions the main objective of a study in Handeni District, North Eastern Tanzania was to improve a better understanding about the situation of Miombo utilisation in the research area through descriptive analyses. Derived objective was to describe the potential development of the region in case of fulfilment the subsistence needs, income generating, and ergonomic aspects such as labour organisation and qualification.

The investigation was focused on the inhabitants of four villages from two different ecological zones of the Miombo woodlands (the Dry Miombo or Somali-Maasai Forest EZ I and the Less Dry and Thick Miombo EZ II). The villages of Kang'ata, Kwamagome, Kwediboma and Mafisa are not easily accessible. They are located in the Handeni District in the Tanga Region of Tanzania. Most of the people in these villages belong to the Zigua- and Nguu-tribes. Both tribes basically depend on small scale agriculture (with corn and beans as the main crops) for subsistence needs. Outside the habitats of the *Tsetse*-fly they keep cattle and goats. Moreover, Maasai – a semi-nomadic cattle rearing tribe -live in this area at times. They depend on milk and other cattle products. Because life style and diet of Zigua / Nguu are basically different from that of Maasai, different knowledge about useful NTFP on Miombo woodlands was to be expected.

Information related to the utilisation of forest-resources based on the knowledge and experiences of local people and local experts, was collected through individual interviews (57), group discussions (27 with about 800 participants in total), field observations and key interviews (10) within and outside the research area.

(iv) Methodology and workplan: To get access to the traditional knowledge about woodland utilisation, tools of PRA were used to record the actually used NWFP and also the way of harvesting and use of these products, their contribution to subsistence and their economic means. The following research steps serve to reach the main objective: **1.** Assessment of the role of forest utilisation, especially of NWFP, for the predominantly agrarian subsistence livelihood. **2.** Identification of the present role of selected NWFP of Miombo woodlands, taking into account ecological, economical and socio-cultural aspects of land use. **3.** Description and evaluation of possibilities and constraints of diversification of the product range, and an increase in direct utilisation of trees and shrubs, based on the carrying capacity of the ecosystem.

(v) Results and conclusions and their relevance for development: The three tribes Zigua, Nguu and Maasai consider woodlands first of all as a **resource for agriculture and cattle grazing.**

In fact, life at the subsistence level, and even survival in the woodlands, is only possible through utilisation of a diversity of products from the woodlands: firewood is the only source of energy in the rural regions; for houses, huts and enclosures not only timber and poles from woodlands are used, but also branches for wall and roof constructions. Bark serves as a connecting element, grass is required for roofing. Wood and bark are processed to make furniture and simple transport vehicles. Wildlife and edible mushrooms offer an important source of protein rich nourishment, particularly where cattle husbandry is not possible (e.g. within the habitat area of the *Tsetse-fly*). During extreme hunger periods, by which the rural region is haunted again and again, honey, mushrooms and food from wild plants often provides a last chance for survival. Medicinal

plants may be the only medicines available where there are no hospitals due to financial or technical reasons. Furthermore, the medicinal plants are important for health care of the livestock. Last but not least forests and single trees are important spiritual places and therefore relevant for the social welfare of the community

Main use of NTFP: During the study, four products or product lines from the woodland were identified jointly with the participants: These products are used by different sections of the population, and are seen as being suitable for sustainable use and possible marketing. Currently the utilisation of these products is limited and does not exceed the biological potential or meet the market demands.

Honey is mainly used for subsistence consumption, generally in fermented form as local beer. If properly stored, honey can be an important food during hunger periods. Honey can be collected in two ways: through an environmentally sound technique in the form of bee-keeping in hives or using destructive techniques in the form of honey hunting. Honey trade can be profitable for all members of the family as well as for the entire community. The harvesting and processing of honey and by-products can create jobs and income. Men traditionally and currently carry out bee-keeping and honey marketing; they also get the earnings. In comparison with honey hunting, the revenue from bee-keeping is higher, with a small capital outlay required. The higher profits of bee-keeping might encourage people to use resources in an environmentally friendly manner. First of all through the establishment of bee-keeping co-operatives women could also be involved in the process, which would give them the possibility of earning income. Honey can be marketed locally and regionally. The entrance of Miombo honey in national and foreign markets is also possible, as examples of different neighbour countries show. A strengthened demand for honey and therefore a more intensified skilled bee-keeping, would not have any negative consequences for ecological functions.

Bark is used in large amounts as a construction material. Bark from selected tree species and bole forms is used for different purposes. Debarking can be practised without severe damage to the tree. Large pieces of bark are traditionally harvested by men, smaller pieces and strings by women and children. Bark strings are locally marketed in small quantities. Potential larger markets for bark are limited, since cheaper substitute materials are available in towns. Production of arts and crafts commodities from bark fibres might have a niche market. With appropriate guidelines in this job, men and women can generate income without much investment. A larger market for bark products, however, could lead to an increase in demand and destructive bark utilisation. Recommendations for bark use can only be expressed in the framework of the utilisation of the whole tree.

Food from wild trees and bushes are used mainly during extreme dry seasons or to prepare certain local meals as an additional food. The collection of wild vegetables and fruits is done by women and children, without any cultural or technical conflict with the cultivation of agricultural crops or other household activities. Seeds of wild vegetables are cultivated to a limited extent around the courtyard and on the field. There is only a slight monetary value on the market for these products, therefore they are rarely sold and are available to fulfil the rural population's own needs. This is different from agricultural products (e.g. corn, beans, fruit and eggs) which are sold occasionally, even before the producers' own needs are satisfied, to meet financial requirements.

Hombo - a pulverised mixture of various aromatic herb leaves of different plant species -, presents a special case. The pulverised mixture is storable for a long time and counts among the specialities of the region. Because of the abundance of useful species for Hombo, their use does not lead to a threat for any individual species. The marketing of Hombo can be expanded to a limited extent in local and regional markets, because the processing of the raw material involves no financial risk and the product is easily transported and not perishable. Women invest some extra time in the production of Hombo, so they could be the major bene-

ficiaries. The profit margin is relatively low, because the product is only a local demanded speciality, which can be replaced by other food ingredients.

Furthermore several different edible parts of plants could be preserved and then be stored through appropriate techniques. These would be useful as a food reserve or emergency food during hunger periods or for direct marketing. In order to get a higher profit, co-operatives for production and marketing should be established, through which experience and skills can be shared.

Edible mushrooms are represented on a broad spectrum in Miombo woodlands. Mushrooms are consumed only to a limited extent by the local people. People show clearly different personal preferences in quantities and species to be consumed. In the region surrounding the research area dried mushrooms are infrequently marketed. A sustainable harvest of edible mushrooms under proper management is a possibility. In several Miombo countries, the enrichment of diet with mushrooms, and generating income through strengthening trade with mushroom products, are recognised as a good chance for the economic development of the rural and urban regions. The professional trade presents difficulties caused by the seasonality of mushrooms fruiting; this problem can be alleviated to a limited extent through the application of appropriate preservation techniques. Other problems are the weak demand of the markets and the bottlenecks in work capacity. This is because during the fruiting season women are highly involved in agricultural activities. Recently women and men participate in collecting mushrooms. An expanded trade in mushrooms can only be recommended in specific cases, but an enrichment of diet with fungi is highly recommended. Comprehensive information about the proper preparation of edible species and about competent preservation is urgently needed; such information should be prepared by ecotrophologists in co-operation with the local specialists – the female users.

Conclusions:

Research results from the participating observation and the estimation of the local experts indicated some discrepancies between the extent of knowledge of the rural population about the potential values of the forest and its products and the extent of the actual use of the forest resources, especially for the selected products. Even though there is a large demand for income sources, the major part of NTFP serves to cover the household needs. The marketing of these products must be analysed separately and correctly, although market expansion for several products is possible and these products are not harvested by destructive techniques.

In the research area the marketing of woodland products, also of NTFP, fundamentally can be considered as an incentive for the conservation of the woodlands; this became frequently clear during interviews and discussions. Likewise the decline of woodlands is identified as a cause of scarcities, which must be balanced through financial investment. Up to the present in rural areas there has been little marketing of products of the forest, mainly because of the poor infra-structure and lack of knowledge or special methods of the post harvest management. As the marketing of forest products is already problematic, expanding the markets would become even more risky because of uncertain conditions of delivery and purchasing.

The acceptance levels for accelerating propagation of utilisation and marketing of NWFP vary between and within communities. For subsistence economies an intensified use of NWFP can be recommended in most cases, while strengthening commercialisation is only recommended with caution because of the high risks. An establishment of collaborative processing and marketing can improve the marketing possibilities of all product samples.

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