

Impacts of NTFPs on poverty in Africa

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Abstract

Poor forest communities in the (sub-) tropical regions of our world are in many cases highly dependent on non-timber forest products (NTFPs) for their survival. In theory, better forest management and commercialisation of NTFPs could make a window of opportunity to alleviate poverty in these communities. However, more often than not, practical implementation shows that this is hard to obtain or only temporary beneficiary. In this paper I tried to examine why some management interventions are almost certain to fail and what circumstances lead to successful sustainable NTFP extraction on the African continent, both for humans and nature. To assess this, techniques and theories addressed in the course Human Dimensions of Fish and Wildlife Management at SLU were applied. I conclude that top-down restricting access to valuable natural resources is devastating for poor people. Also, maybe contradictory, biodiversity often comes under greater pressure. A better management policy is to organise a bottom-up co-managerial care taking of the commons. Fairly and equally distributing NTFP harvesting rights and providing good income alternatives are the best ways to help people out of poverty. Important tools are high participation levels and a strong social cohesion.

I. INTRODUCTION

Throughout the world about 800 million people live in the vicinity of tropical forest and savanna [15]. The geographical focus of this paper is Sub Sahara Africa because of the high dependency on forest products and the high poverty levels. In the Congo Basin for example, 90% of the population is directly dependent on natural resources derived from forests for food, firewood, raw materials, medicinal substances, aesthetic and cultural usage [8]. Researchers have coined these natural products with the term *non-timber forest products* (NTFPs). The FAO definition of NTFPs is [4]:

Non-wood forest products consist of goods of biological origin other than wood, derived from forests, other wooded land and trees outside forests.

Common examples are rattan, baobab fruit, rubber, forest honey, bushmeat, bark, forest mushrooms, medicinal plants, dyes and spices.

The tremendous variety of NTFPs, especially in central Africa's tropical forests, make them an both a highly popular though difficult topic in vegetation ecology, climate change mitigation, sociology, economics and the omnipresent buzz concept of sustainable development. The use and importance of NTFPs for their harvesters can range from an occasional harvest to a professional exploitation, from for own usage to internationally traded and from a supplementary to a subsistence importance in local household economies.



Figure 1: Typical NTFP market (courtesy FAO).

Research in NTFPs has seen a rapid increase past 25 years [16, 7]. This is due to the beliefs that (i) NTFPs have the possibility to lift the poorest people of forest communities out of poverty (for example [18]), (ii) harvesting NTFPs in stead of timber affects biodiversity positively [11, 19], and (iii) long term economical revenues of NTFPs could approach or even exceed that of timber production [12]. Together, application of these assumptions have lead to the so called *conservation through commercialisation* principle [13], hot topic in the slipstream of the Brundtland report and RIO 1992 [21]. It is common knowledge that people dependent on NTFPs are more likely to be poor [9] or as [11] state: there is "overwhelming evidence that the poorest segments of the societies around the world are the populations principally engaged in NTFP extraction". This means that there exist a big opportunity for human development in NTFP dependent communities. Many newly adopted management practises in the developing countries cope with these three general beliefs. The central idea is that if people would get fair and reliable prices for their NTFPs, they could make a good living out of them.

These beliefs were eagerly adopted, especially by many NGOs and governments working on poverty alleviation, halting biodiversity loss or sustainable development. However, there is more and more criticism in recent research on these beliefs, as knowledge and practical implementations of NTFP managed forests increase. A lot of constraints halt the - at first sight - straight forward implementation of conservation through commercialisation to book results in the long run.

This paper tries to reveal what the possibilities and pitfalls in NTFP policy and management are when addressing poverty alleviation, thus trying to find out if belief (i) holds any truth. The first part digs deeper into the mechanisms of how NTFPs affect people and communities. What stakeholders have impacts on or interests in forest resources? What is the cause of poverty in forest communities? How do NTFPs contribute to household economies?

The second part is reserved for some success

stories in sustainable NTFP extraction and some cases were communities did not benefit from forest resources. Three case studies are highlighted.

The third part will contain personal recommendations and considerations for future NTFP management and a general conclusion.



Figure 2: An example of land use competition: a cattle farm bordering pristine Amazonian rainforest in Maraba, Brazil (courtesy REUTERS/Paulo Whitaker).

II. BACKGROUND AND FRAMING

Forest-dependent people are poor and poor people are forest-dependent [11]. Why is it so hard to escape poverty by using forest resources? To assess this, we first need to frame the relationship between the human needs and the benefits forests can provide.

I. NTFP research

Research of NTFPs can be divided in two main subjects: biological and anthropological. The first one is mainly used to determine the amount of available NTFP, the viable population, the ecology of NTFP species,... Mostly direct field methods are applied. The latter tries to explain what impact NTFPs have on people. The main methodologies are interviews, focus group discussions, surveys and market analyses. These techniques can also be used to make estimates of NTFP abundance in biological research.

II. NTFP collection strategies

Different groups of NTFP using households can be distinguished. For example, Belcher *et al.* 2005 [3] found five types of strategies that households globally use regarding NTFP contribution to household economy. *Subsistence strategy* households have low cash income and collect wild harvested NTFPs primarily to satisfy their own needs. *Supplementary strategy* is more market oriented and provide additional cash income by selling wild NTFPs. The households that use a *integrated strategy* use cultivated NTFPs, in most cases planted on their own property (whereas the two former strategies collected wild NTFPs in common forests) for additional income. The authors also discovered two groups of *specialised strategies* NTFP collectors: on the one hand forest dwellers that gathered few but valuable NTFPs and on the other hand households who cultivate these specialised NTFPs. Many of their products are for the national or even international markets.

These five strategies are important to understand the interaction between poverty and NTFP income. Subsistence households are generally speaking the poorest group. This group also exploits the biggest variety of NTFP species. Since Africa is primarily associated with the subsistence strategy [2] (unlike the more specialised strategies for example in Asia), this paper will focus on subsistence strategy. Belcher *et al.* 2005 [3] provide more information on the other strategies. One must be aware of the fact that most people that adopted the subsistence strategy do in general not have another option. Either landownership, capital or special skills are required.

III. Management Intensity

Although NTFPs are limited to forest ecosystems - and in some extent to argoforestry, depending on the applied definition of NTFP - this does not necessarily mean that there is no active transformation of the forest to suit human needs better. Three categories of management are defined in increasing intensity of modification [3, 2]: (i) Natural - little or no

transformation, natural regeneration; (ii) Partial transformation - management techniques like weeding, crown opening are practised; (iii) Cultivated forest - NTFP species are deliberately planted and taken care of. Overall, biodiversity and the amount of community shared forests tends to be lower with intensifying management.



Figure 3: *Fruit of the Tree of Life - the Baobab - provides a very nutritious alternative when agricultural crops fail.*

IV. Stakeholders and conflicts

Forests throughout the world experience continuously growing pressure from different stakeholders interested in the various and valuable ecosystem services forests provide. As a result, a lot of stakeholders and conflicts can be distinguished. In the scope of this paper, the people gathering NTFPs are identified as the central stakeholder. In contrast, timber companies that buy logging concessions are mainly interested in qualitative and quantitative stocks of economically important tree species. Clear-cuts for obvious reasons are devastating for most of the NTFP stocks. When selective logging is applied, households collecting NTFPs could theoretically co-exist with timber companies, because they do not share interest in the same resources. However, in an inspiring article of Rist *et al.* (2012), the authors sum up research works that found negative impact of selective logging on NTFP resources, mainly of indirect cause. Such indirect causes could be soil compaction by heavy forest vehicles, scar-

ing off game meat or creating tree cover gaps favouring less valuable species.

Conservationists on the other hand, in essence concerned with biodiversity and forest cover loss, can pose a threat to poor forest-dependent households as well. Often ongoing NTFP extraction leads to some amount of resource depletion. As a result, conservationist organisations can try to limit or deny access to natural ecosystems important in the subsistence of these people. Though many conservationist organisations try to act with more knowledge of the human dimensions in tropical forests, this is still an issue to consider. Another important group of stakeholders are farmers. In African rural areas agriculture plays a key role in deforestation by means of slash-and-burn practises, contributing to the devastating land use change. Being a hunter-gatherer or farmer is often ethno-culturally defined, enlarging the possibilities of conflicts.

The last stakeholder group are the humanitarian NGOs, concerned with health and welfare of poor NTFP dependent societal groups.



Figure 4: *Hunting of bushmeat - a highly valued NTFP - is in many cases the reason of declining wildlife populations in Africa (foto courtesy of FAO).*

V. To log or not to log?

On the macro economic level, deforestation levels and GDP growth are positively correlated, and thus contributing to a nations development [21]. However, often local people do not benefit from timber extraction relative to mar-

ket prices of commercial wood [2]. Due to the long turnover time and the high cost of investment, the required forestry skills, the need of secured land ownership e.a. poor people are often excluded. Equally important: it's difficult to eat trees in hard times like drought, failed crops and famine, reducing the popularity of investing in planting trees. In that optic, NTFP commercialisation is to prefer over logging.

VI. Safety nets or poverty traps?

Angelsen and Wunder (2003) [2] provide a clear explanation of the concepts of *safety nets* and *poverty traps* in an extractive NTFP forest ecosystem setting. Due to open-access common land and low capital and skill requirements, mainly poor people are involved in NTFP collection. Although NTFPs are seldom the principle cash income of subsistence strategy households, they can provide important value in times of shortage [6, 17], e.g. dry periods, before harvests, in times of unemployment or illness and thus creating a 'gap filling' or safety net function to overcome shortfalls in income.

Addressing the *why are forest-dependent people poor?* question leads us to the concept of NTFPs as a poverty trap. It is hard to commercially market NTFPs. Angelsen and Wunder (2003) give three reasons for the low return of NTFPs:

- spatio-temporal variability and low density of NTFPs in (semi-) natural ecosystems
- physical remoteness and distance to markets
- badly developed and heterogeneous markets

Even when these constraints are taken away and a price rise is induced, there is no guarantee of successful lifting people out of poverty [9]. Again, Angelsen and Wunder (2003) list several causes:

- More stakeholders will be interested in a more valuable resource, more powerful ones will outcompete the poorer ones.

- Common property can be claimed for private land use, leading to inequality.
- Forest ecosystems can get overexploited, taking away income opportunities in the long run for NTFP dependent people.
- Domesticating valuable NTFP species require skills, capital and property which the poorer segment of society often lacks. Market shares and influencing power decline for these people.

Now is NTFP dependency a so-called poverty trap? One should answer that question with caution and profoundness. Overall NTFPs could be seen as a poor resource in poverty *reduction* and rather an effective poverty *pre-venter* [2]. A too romanticised image of hunter-gatherers by policy makers and aid workers could lead to people staying dependent of the forest while maybe better, more sustainable alternatives are available. In these cases the term poverty trap is appropriate.

III. CASE STUDIES

The success of a sustainable forest resource management varies from case to case. There are no general rules to follow how to optimise human welfare *and* biodiversity, though by examining three case studies I try to find some recommendations for future management. The first one covers the Bale highlands of Ethiopia, where Yemiru *et al.* (2010) investigated the link between forest income, poverty alleviation and equality.

I. Bale Highlands, Southern Ethiopia

Ethiopia is a relatively poor country in the Horn of Africa with a population of 94 million people. It has a low HDI - it is ranked 173th out of 187 countries (World Bank). The study area, the Bale Highlands (see Figure 5), consist of three land use types: farmland, forest edges and dry upland forests.



Figure 5: Mountainous landscape in Bale Highlands, Ethiopia

A participatory forest management (PFM) is practised, in which the local community is organised in so-called Forest Dwellers Associations. Access to the forest is limited to the people that are members of these associations ¹. During one year researchers used household surveys, group discussions and key informant interviews:

- **household surveys: type I** - at beginning and end of study period; survey household socio-economic characteristics, annual information on risks, prices, and vulnerability
- **household surveys: type II** - quarterly surveys to collect information on household incomes and engagement in forest management activities
- **group discussions** - village level information
- **key informant interviews** - history of the area, the process of Forest Dwellers Associations establishment, and other qualitative information

40% of the households (n=352) were randomly selected through the Forest Dwellers Associations.

Overall, Yemiru *et al.* conclude "results indicate the importance of forest products in both subsistence and cash income generation, in poverty alleviation, and also as safety nets in times of

¹These community forests were formerly state owned and open-access.

income crisis". The researchers found that limiting access to the forest induced a price rise of the NTFPs. Because the harvesting rights were distributed in a fair way, NTFP marketing had an equalising effect on forest income. People were involved in the decision making. As a compensation, this set of advantages made it possible to put a ban on harvesting methods that posed a threat to the survival of the respective tree species. Also, farmers were not allowed to enlarge their cropland within forest boundaries. The researchers did not assess the effect of participatory forest management in the Bale Highlands on biodiversity and nature conservation.

II. Santa, Cameroon

Neba (2007) describes what can go wrong when limiting access to natural resources without including local stakeholders. In this case, the study area is the dry ferrallitic Bamenda Highland of Cameroon, with "unsystematic cutting of trees" and "common illegal poaching". Slash and burn farming, grazing encroachment and bush fires have "ravaged the forest" (*ibid.*). Within the *commons* a conflict between herders and farmers was present.

To halt the environmental losses, a forest reserve was installed. The top-down decision making did not include local stakeholders and the management was almost entirely focussed on nature conservation. As a result, there was little support for the managers' decisions. 30% of the farmers for example did not want to cooperate with the project because they were not involved in the decision making. They were restricted access to a substantial amount of resources. Most of the local stakeholders do not acknowledge the state as owner of formerly *their* grounds.

The researchers used fairly the same methods as the Ethiopian case study to assess the attitudes of locals towards the new management. Because of the low support and the lack of a profound law enforcement poaching levels and illegal harvesting of other NTFPs increased. Poor people just do not have any other choice

than to engage in illegal activities. Instead of decreasing poverty and ethnic conflict, it was biodiversity that was the big loser of this failed management.



Figure 6: Bamenda Highlands in Cameroon (foto courtesy: Syndication International Ltd., London)

III. Rwenzori Mountain National Park, Uganda

Tumusiime *et al.* give us a nice example of the establishment of a national park and its consequences on local NTFP exploitation. The Rwenzori Mountain National Park (RMNP) in Uganda is a 100 000 ha ecoregion in western Uganda. They contain the so-called "Mountains of the Moon" - the impressive and cloudy Rwenzori massif - which is one of the Nile's most important springs. UNESCO, WWF and Birdlife International all acknowledge the area's extraordinary environmental importance. In 1991 its legal status changed from Central Forest Reserve to a national park, making all forest resource extraction illegal. Because compensation of income loss wasn't even considered and a rebel occupation hindered an effective law enforcement, many forest resources were clandestinely harvested. It was not until 2008 that collaborative management agreements (CMAs) were tried out in some villages surrounding the RMNP. The researchers collected data from both before/after the CMAs and of CMA/non-CMA villages by conducting household surveys, semi-structured interviews and village level focus group discussions. The authors repeatedly stress that they paid a lot

of attention creating a "anonymous" environment to let people feel safe to tell about illegal activities. They carefully examined the ratios of *park environmental income*, *non-park environmental income* and *total income* to assess the link poverty and forest dependency.



Figure 7: *The Rwenzori Mountains National Park, an area of outstanding natural beauty, threatened by over-harvesting of natural resources.*

In their conclusions, Tumusiime *et al.* state that the "mainstream" management policy of the national park (*i.e.* narrow focus on biodiversity by limiting access to natural resources) proved little or even not effective. They state that it pushed the poorest cohorts of people bordering the RMNP deeper into poverty. Moreover, even the precious wildlife wasn't conserved due to the necessity of locals to (illegally) extract the national park's resources. They argue that a better approach is to allow managed access to the park and gradually create other opportunities outside the park's border. The implementation of CMAs is a step in the good direction.

IV. SYNTHESIS AND RECOMMENDATIONS

What is the best management option to optimise people's well being and biodiversity in poor rural communities in Africa? What can or cannot be applied to alleviate poverty?

Based on the review of literature and the three case studies participation seems to be the key element, but let us first examine the three fixes. **The cognitive fix** seems the easiest at first sight. Telling people why and how overexploitation of the commons will in the future lead to a certain ecosystem collapse is fairly cheap and straightforward. However, this will never lead to stopping gatherers to collect NTFPs if there is no better alternative. In the setting I investigated, there are no such alternatives, so I would not spend (or waste) my money on the cognitive fix.

Technological fixes are generally speaking harder and more expensive to implement. I describe two examples of possible fixes. The first one could be enhancing agricultural production (irrigation, crop rotations, different crops) so pressure on NTFP species is lowered. Another one could be in providing better access to markets in order to make it possible to get a higher and more reliable price for NTFPs. One could think of making better roads to cities or providing storage rooms to expand the temporal range in NTFP supply. The question remains what the impact will be on biodiversity with more valuable resources, since more stakeholders will be interested in exploiting them...

Structural fixes seem the most promising but also the trickiest in my eyes. National and local governments could impose laws and regulations to protect natural areas, but it has proven difficult to make stakeholders comply with them if they were not mutually agreed upon. A top-down approach is disastrous for people's feeling of commitment and co-management, especially in areas where the state denies access to former common grounds. However, to leave the commons unmanaged is not an option either. The examples of the tragedy of the commons are omnipresent. In my opinion (and others, such as [5]) a better way is trying to involve as many stakeholders as possible. Essential is that the direct users of NTFPs have access to the decision making process. If an equal and fair distribution of harvest rights of common goods is issued and accepted by

all stakeholders, a base for sustainable nature management is reached. One very important necessity is the existence of a strong social cohesion to gradually make it the norm to not overuse the commons. This will work better than formal sanctions. In many cases law enforcement alone is not sufficient to protect forests or other wooded ecosystems [20], but it can provide a legal base in conflict situations (cfr. soft governance in the EU). The harvest rights can be relocated in an adaptive management cycle depending on the availability of the natural resources. In essence, as Börner *et al.* [5] state it, it is more effective to use the carrot than the stick.

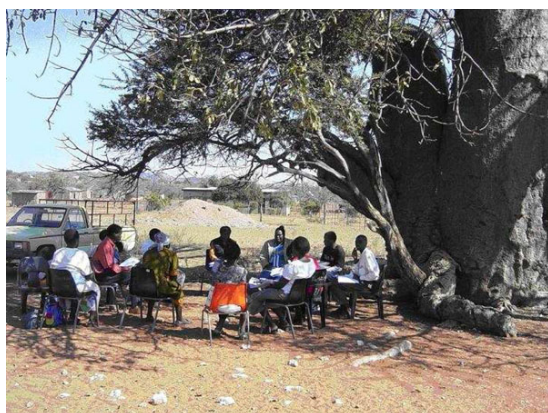


Figure 8: A focus group discussion in the shade of a baobab, South Africa (courtesy of [1]).

Where did the entirely positive view on NTFPs and poverty alleviation among scientist in the nineties come from? I think that the confirmation bias plays a big role in this matter. More research was conducted in promising NTFP settings. The idea of merging human interests and environmental issues sounded (and still sounds) like the silver bullet solutions to so many actors working on the matter that it was very easily adopted. Sceptical voices were drowned in positive news. Nowadays a more realistic and holistic vision is pictured by many aid workers, governments and local stakeholders alike. Current knowledge enables a lot of opportunities and opens up perspective for a world in harmony and peace. Ongoing

research in both the biological and anthropological pieces of the NTFP-poverty-biodiversity puzzle will help us to reach that dynamical optimum.

V. CONCLUSION

Though there is a lot of pressure on the earth's ecosystems for its resources, it is mainly the (very) poor that are the most dependent on them. Denying access to forests (e.g. for environmental protection) is thus most threatening to those people. Enforcing limited access by law leads to an uncontrolled illegal extraction of NTFPs because impoverished people see no other alternative. Most researchers agree that a softer and human centred policy is more adequate and sustainable. This implies the use of collaborative management, high stakeholder participation, trust and social cohesion, empowerment of the weakest stakeholders.

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