

RESEARCH ON NON-TIMBER FOREST PRODUCTS: A REWARDING SUBJECT FOR JOINT PROJECTS BETWEEN CHINESE AND GERMAN RESEARCH INSTITUTIONS

- A background paper -

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Non-timber (or Non-wood) forest products (NTFPs) are defined as goods of biological origin other than wood, derived from forests, other wooded land and trees outside forests (FAO, 1999); they include products used as food and food additives (edible nuts, mushrooms, fruits, herbs, spices and condiments, aromatic plants, game), fibers (used in construction, furniture, clothing or utensils), resins, gums, and plant and animal products used for medicinal, cosmetic or cultural purposes. Non-timber forest products have long been an important component of the livelihood strategies of people living in or adjacent to forest areas. Several million households world-wide depend heavily on these renewable resources for subsistence and/or income, and the FAO estimated that eighty percent of the population of the "developing" world use NTFPs to meet some of their health and nutritional needs (FAO 1997). However, NTFPs are seldom the primary source of household income, since their supply is largely seasonal.

A study by Jansen *et al.*, (1991) showed that nearly 6000 species of rain forest plants in Southeast Asia have economic uses. While over 150 NTFPs worldwide have been identified as significant commodity in international trade (the most important tropical products are rattan, brazil nuts, gum arabic, bamboo and spices) it is more difficult to quantify national trade, which may be very substantial (Tropenbos International (2005)).

NTFPs have attracted considerable interest as a component of sustainable development initiatives in recent years due to their ability to support and improve rural livelihoods while contributing to environmental objectives, including biodiversity conservation. The eco-friendly and people-friendly connotations associated with NTFPs have supported some products to fill in a niche in international trade: the small, but rapidly growing fair-trade market. However, despite this positive image, there is no guarantee of a beneficial outcome and the utilization of NTFPs requires the same measure of planning and control that is required for timber in order to be sustainable. Decisive factors in the sustainable use of NTFPs include government involvement, the ability of local people to claim and enforce use rights (NTFPs are in most cases openly accessible), market transparency and access, and pressure on the resource (Tropenbos International (2005)). Higher value is often associated with higher harvest levels and more intensive management. Unlike the larger number of less valuable NTFPs, those with a high market value are often not harvested in a benign way, and many are lost to the poor as other stakeholders take over control.

Domestication of NTFPs can be a way to intensify production (through higher yields, improved and/or more consistent quality, and control over timing of harvest), secure

producer rights and reduce pressure on wild resources. Its risk are that domestication of wild-harvested products can lead to genetic homogenization, reduce the economic value of wild systems (up to the point where natural forest land is being cleared to grow domesticated NTFPs on a larger scale) and lead to transfer of benefits from one group of stakeholders to another (Belcher, 2003).

Despite more than a decade of research and targeted development projects, systematic understanding of the role and potential of NTFPs in conservation and development (i.e. how to enlarge its benefits for rural communities and the environment) remains weak. This is especially true for China where research and development efforts have only recently addressed the issue of sustainable utilization of NTFPs. The rich variety of non-timber forest products in Southwest China, many of which have been used by people for centuries, has been well-documented by Pei (Pei, 1985; 1996), and Zu and Jiang (2001) to name just a few. Zu and Jiang (2001) point out that more than 6000 plant species growing in China are being used for medical purpose, among which more than eighty percent grow wild in the forest. However, the fast process of modernization, urbanization and globalization not only increasingly adds more entries to the list of extinct species (i.e. rapidly reduces biodiversity), but also leads to the gradual and irretrievable loss of indigenous knowledge on the uses of medicinal plants and other NTFPs.

Despite the rich knowledge on medicinal plants, past research and development efforts have rarely thought of setting up an inventory and monitoring system, nor have they addressed management issues related to these and other NTFPs in China. Only the Matsutake mushroom (*Tricholoma matsutake*) has gained considerable research and development attention due to the fact that its economic value has rapidly increased in recent years as a result of rising demand in Japan. This mushroom grows wild in the Northeast and Southwest of China and is sold fresh and dried in local and the domestic market, but the largest portion is exported to Japan.

Among the many non-timber forest products that are being extracted by rural households from natural and planted forests and plantations in the mountains of Yunnan province, mushrooms and medicinal plants (both in many species and varieties), as well as walnuts, pine nuts, wild vegetables, eucalyptus oil and honey play an important role in the household economy. Examples exist for institutional arrangements aimed at the sustainable utilization of NTFPs in communal forests for those products that are valuable (and thus threatened by over-exploitation), such as Matsutake. These are good examples to learn from and improve upon and as emphasized in FAO's State of the World's Forests (2003): "*if benefits are to be provided on a sustainable basis to local communities and to countries at large, more effective controls may be required to maintain populations of NTFPs at productive levels. The means to accomplish this will vary, but they must be built on sound economic and ecological principles, and often on traditional institutions*".

Since enacting a logging ban in all natural forests in China under the Natural Forest Protection Program (NFPP) in 2000, people that traditionally use forest products (i.e. wood and non-timber products) for subsistence and income needs, have seen their resource base diminish substantially. The Sloping Land Conversion Program (SLCP; enacted in 1998) has further reduced upland farmers' production options as SLCP land cannot be used to grow other crops in-between the trees, even when trees are young and leave plenty of space for intercropping. However, the use of NTFPs in natural or planted forests is normally not restricted so that they have been increasingly exploited without a long-term view towards their sustainable use. The World Agroforestry Centre (ICRAF) and the Forestry Department in Baoshan prefecture, Yunnan province have started a pilot project to assist smallholder upland farmers to domesticate selected medicinal forest plants with high

commercial value. Since they are not considered as crop species, they can be grown on SLCP land. Increased household income and reduced pressure on wild resources are the prime benefits of such an agroforestry system.

ICRAF has been working closely with the Department of Ethnobotany at the Kunming Institute of Botany (KIB) since it started to build research ties with China in 1995. In 2004, ICRAF and KIB jointly founded the Center for Mountain Ecosystem Studies (CMES) to collectively work towards understanding the causes and effects of past and current landuse changes in biologically and culturally diverse mountain areas in Southwest China. Joint research has been conducted in Northwest Yunnan that aims to generate concrete recommendations for development and policy on improved community-centered natural resource management.

Northwestern Yunnan has become of particular research interest in recent years because the mountain watersheds harbor great biological and cultural diversity, and are one of just a few places on earth recognized as both a Global Biodiversity Hotspot and Global 200 Priority Ecoregion. The area has recently been declared a World Natural and Cultural Heritage site by the United Nations Educational, Scientific, and Cultural Organization (UNESCO). Northwest Yunnan (an area covering almost 70 000 km²) is home to more than 15 officially-recognized ethnic groups. These groups pursue complex livelihoods, based on a wealth of knowledge, beliefs, and institutions for maintaining the region's diverse landscapes. Forests account for more than 60 percent of the land area of northwest Yunnan, and provide crucial ecological and economic services, such as wildlife habitat, water retention and regulation, and soil erosion control. Forest ecosystems are also an important grazing habitat for livestock, and provide local populations with food, fuel, medicines, building materials, and valuable non-timber forest products (NTFPs).

Based on case studies conducted in Northwestern Yunnan, Xu and Wilkes (2004) conclude that biodiversity loss in the region is mainly driven by land use and land cover change and that market driven loss is currently a major threat, especially for NTFPs. Cross-border trade with the Southeast Asian neighbors plays a significant role. Xu and Wilkes (2004) observe this as indicative of what is occurring in many global biodiversity hotspots. They point out that market information is primarily supplied by outsiders who engage in collection or procurement of local produce and who are unconcerned about sustainability of harvesting. However, buyers and traders are in many cases the only link for rural communities (especially in remote areas) to the market. Xu and Wilkes (2004) also point out that NTFPs are liable to agricultural product tax, but enforcement is difficult.

The studies conducted by KIB and ICRAF point to important knowledge gaps that may lead to serious exploitation and unsustainable use of the natural resource "NTFP", among them the following five:

1. lack of basic knowledge on germplasm and non-existing or incomplete inventory;
2. no in-depth and long-term monitoring and institutional arrangements to ascertain sustainable extraction levels of major NTFPs;
3. insufficient market transparency for communities' (in terms of quality, price, markets for NTFPs);
4. only general, superficial knowledge of NTFP domestication and little understanding of the effects of domestication on product quality and price and the conservation of wild sources; and
5. no existing research on the full length of the commodity chain for major non-timber forest products and the various actors in the chain.

Based on the current state of knowledge on the use and management of NTFPs in Yunnan, Southwest China, and other parts of the world, answers to the following research questions are being sought:

- What are the most important NTFPs in terms of market value, their abundance (or scarcity) and their ecological importance for the ecosystems in which they grow?
- Have they and the environments they grow in been delineated, inventoried and monitored? (Note: this is a crucial base for developing sustainable management techniques, particularly for those species that are in danger of over-exploitation).
- What are current management regimes (amount, frequency and methods of collection) for these NTFPs, what are/were the traditional practices, how have these changed over the past decade, and what have been the effects on their abundance or scarcity and on biodiversity in general? Are there indications that harvest levels are decreasing and is there a link to changes in forest area/structure? Are local communities aware of these processes and associated effects?
- What are the economic benefits obtained at household, local and provincial level from selected NTFPs (in absolute terms and in relation to other forest); how are they being processed (i.e. which value added processes are being done) and traded (commodity chain assessment)?
- What role do NTFPs play at domestic and regional (Southeast Asian) level? What product and amounts go into border trade and into the international market?
- How can smallholder upland dwellers benefit more from the use of NTFPs, i.e. what value-added measures can they take at household and community level, such as processing, labeling, packaging and trading? How can ownership, control over resources, market knowledge and access be improved for the benefit of poor upland communities?
- Which species are suitable for domestication; what agroforestry systems provide productive models for growing NTFPs on-farm; what are the effects of on-farm production of NTFPs on quality, price and on existing wild sources?
- What are the existing institutional arrangements to sustainably manage NTFPs; do they provide a model to learn from and improve upon? What recommendations can be drawn from these and other experiences that can feed into applied research projects and policy recommendations?

To initiate a Sino-German research cooperation appears particularly promising at this point in time, because research and development on NTFPs in Southwest China has recently gained significant attention from the Chinese government and donor organizations. The State Forest Administration (SFA) of China with support from the Ford Foundation and the World Agroforestry Centre is currently planning a national conference and workshop on the sustainable use of NTFPs in China. The conference will review China's NTFP policy within the National Forestry Management Framework and identify innovative approaches for sustainable community-based NTFP management. The proposed Sino-German research initiative can be linked to this significant event that will not only guide future research & development work in China, but also lay the ground for international research cooperation.

OBJECTIVES OF SYMPOSIUM

The symposium aimed to assess and review the state of knowledge on the use of non-timber forest products in terms of their importance for rural livelihoods and the effects of NTFP

extraction on biodiversity in Southwest China. Symposium outputs will form a base for future Sino-German research that intends to focus on the sustainable management of NTFPs as part of a holistic natural resource management concept in one of the important biodiversity hotspots of the world.

Specific symposium objectives included:

1. To create an up-to-date knowledge base on past and current research and development work on NTFPs, including a list of major species and products according to their utilization and their importance for rural livelihoods (for both subsistence and cash economy);
2. To understand the threats of NTFP use on the maintenance of local and global biodiversity and identify those species that are rare and under threat of extinction;
3. To assess the importance of selected NTFPs for domestic and cross-border trade and identify key enabling and restricting market characteristics;
4. To appraise the potential for sustainable management of the resource, domestication and improved marketing of NTFPs (including institutional arrangement for communities' shared use and trade of products, as well as value-added processing, labeling, packaging and transport);
5. To develop a set of recommendations for future research on the sustainable utilization of NTFPs that not only support targeted development action, but also translate into policy recommendations in a holistic natural resource management context.

The symposium is viewed as the initial crucial step in laying the base for a long-term research collaboration and scientific exchange between German and Chinese institutions. The symposium in Germany has provided scientists from the Chinese Academy of Sciences at the Kunming Institute of Botany and its Chinese partner institutions an opportunity to interact with a large number of German scientists who are experts in the same field of research, and to visit and get to know relevant institutions and field projects in Germany.

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