REFINING CONCEPTS, OBJECTIVES AND RESEARCH QUESTIONS FOR NTFP RESEARCH

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1. REFINING THE CONCEPT OF NON-TIMBER FOREST PRODUCTS

It is important from the perspective of designing sustainable forest management systems to distinguish between NTFPs from natural forests and those from human-influenced systems. Criteria should be defined for drawing a line between forest and agriculture systems (cf. NTFP certification workshop held in Oaxaca, Mexico from 30 November to 2 December 1998). For this reason, the term NTFP should be refined, in order to distinguish between forest products collected from the ‘wild’ and domesticated products of forest origin.

In 1995, we defined non-timber forest products as “all tangible animal and plant products from the forest, other than industrial wood” (Ros-Tonen et al., 1995). In 1998, we slightly modified this definition in “all tangible animal and plant forest products other than industrial wood, coming from natural forests, including managed secondary forests and enriched forests (Ros-Tonen et al., 1998). In both instances, we excluded products of forest origin which were cultivated in home gardens and agroforestry systems, although we pointed out that “in practice, the distinction between ‘wild’ and (semi-)cultivated products is often difficult to make.”

The fact is that many items that are being marketed as NTFPs originate both from natural forests and from man-made vegetation types, since economically successful NTFPs, in particular, tend to be domesticated (e.g. Homma, 1992). Black pepper, bananas and coffee, for example, were once non-timber forest products. Van Dijk and Wiersum (this volume) have already noted that a high proportion of the NTFPs exploited in Southern Cameroon are not collected from natural forests, but harvested from vegetation types modified by man, such as secondary forests, young fallow vegetation and cocoa plantations. In the transition from ‘wild’ to cultivated products, several NTFPs may come from both natural forests and home gardens or plantations. The best known example is that of rubber from Hevea brasiliensis, which is collected from natural forests in Brazil, while in Indonesia it comes from plantations. The same occurs within one and the same country with gum Arabic from Acacia senegal in Sudan and rosin and turpentine made of the oleoresin of Pinus merkusi in Indonesia (Coppen, 1999). When such products appear on the market, they bear no label to clarify their origin. Several authors – including some in this book - therefore apply the term ‘non-timber forest product’ to ‘wild’ as well as to (semi-)domesticated products of forest origin.

The controversy about whether or not to include cultivated products of forest origin into the definition of NTFPs is as old as the term itself. To quote de Beer and McDermott (1989), who were among the pioneers writing on the subject:

“The term ‘non-timber forest product’ encompasses all biological materials other than timber which are extracted from forests for human use. (...) By ‘forest’ is meant a natural ecosystem in which trees are a significant component. However,

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1 The views expressed in this paper do not necessarily reflect the official standpoints of the Tropenbos Foundation.
forest products are derived not only from trees, but also from all plants, fungi and animals (including fish) for which the forest ecosystem provides habitat. Human intervention *per se* does not make an ecosystem ‘unnatural’, although human origination does. Hence, whereas managed, secondary or degraded forests are sources of non-timber forest products, plantations are not.” (de Beer and McDermott, 1989: 17-18).

The problem lies in the fact that the distinction between natural and human-modified forest ecosystems cannot always be easily drawn. There is often a gradual transition from the collection of ‘wild’ products in natural forests to enrichment planting in secondary forest and intensively managed home gardens (Ros-Tonen *et al.*, 1995). Reviewing the history of forest manipulation by indigenous people and various types of indigenous forest management, Wiersum (1997, 1998) concludes that there is an evolutionary continuum in forest-people interactions, during which a process of co-domestication of forests and trees takes place. As a result, the natural ecosystem is gradually transformed into an agro-ecosystem. This evolution is characterised by increasing input of human labour per unit of forest land and intensified human intervention in the reproductive biology of desired species (see also Wiersum’s contribution to this volume).

Various Tropenbos studies confirm this evolution. Van der Hammen and Rodríguez (1996), for example, illustrate how indigenous people in the Colombian Amazon region manipulate forest succession in order to promote the growth of such useful species as the chontaduro palm (*Bactris gasipaes*) and the guamo fruit tree (*Inga* spp.).

De Jong (this volume) provides an example of the evolution of a man-made vegetation type in West Kalimantan, which appears to be a match for natural forest in biological diversity. The Dayak’s habitat of planting trees in the first swiddens they establish eventually results in full-grown forest gardens with species numbers, densities and basal areas that are comparable to many natural forest plots. In addition to the original vegetation, of which much returns after slashing the original forest, these tree-planted swiddens or *tembawang* also contain the planted and tended species, which makes them important sources of NTFPs.

If the transitions are so gradual and the products remain the same, why should we bother about the terminology? The point is that the research questions and recommendations for the sustainable management of NTFP resources will differ according to the context in which the products are exploited. This issue clearly came to the fore during a recent workshop on NTFP certification in Oaxaca, Mexico. Some participants perceived a clarified concept of NTFPs as necessary for the formulation of clear and transparent recommendations for NTFP management and, consequently, of the criteria for the certification of NTFPs. The main question was where to draw the line between agroforests as *forest* ecosystems and agroforests as *agricultural* systems (Mallet, 1999). Both have their own dynamic and, as Wiersum has made clear (this volume), their own management regimes.

Many authors prefer to restrict the use of the term NTFPs to products from natural forest systems, whether they are modified by human intervention or not. The reason for doing so lies in the fact that the term was coined in relation to strategies for the conservation of biodiversity in natural forests. Several alternative terms have been suggested for products from man-made vegetation types, such as forest garden products (Senanayake, 1999), non-timber plantation products (Melvani, 1999) or agroforestry products (Ottens, 1999).
If we take the perspective of forest-dwelling people, we might even consider replacing the term NTFPs with “community-exploited forest products”, even if this might be confusing in relation to FAO statistics, in which forest products mostly refer to wood products. The term NTFPs, besides being an awful acronym, suggests that we are dealing with products that, in the first place, are not something else. This is not in line with the perception of local people, who consider these products as important sources of food (cf. Caspary, this volume), medicines and construction material. From a local perspective (cf. de Beer, this volume), the real issue is not whether these locally exploited products are timber or non-timber, but how they can be managed so that they contribute optimally to people’s livelihoods and can be harvested with minimal damage to the forest. It is through the small-scale extraction of timber and non-timber forest products that local people can be given a secure place in the sustainable management of tropical rainforests.

2. REFINING THE OBJECTIVES

On order to define research needs more sharply, it would be helpful to be more specific about the different objectives of NTFP development, as criteria for successful NTFP development differ according to the aim pursued (forest conservation, (participatory) sustainable forest management, improved livelihoods). Although it would be desirable to reconcile these objectives, research has made it clear that this is “wishful thinking” in most cases.

What this book has made clear is that the different objectives pursued through NTFP development are difficult to reconcile (see also the introductory chapter). If we accept this as a fact, I suggest that we should specify the objective to be pursued and define the research questions accordingly.

Reviewing the studies reported on in this book, we can distinguish two main approaches: a forest-oriented approach and a people-oriented one. It is NTFP research - or better, research on the local use and exploitation of timber and non-timber forest products - that links the two approaches. At the interface of the two fields of research (see Figure 1), the challenge is to find models for the integrated and participatory management of natural forest resources.

As Figure 1 makes clear, this challenge may lie both within and outside the forest, in man-made ecosystems. The latter is the case, for example, if the possibilities are studied for the captive breeding of animals or the cultivation of valuable forest products in forest gardening or agroforestry systems with a view to improving the livelihoods of local people and reducing the pressure on the natural forest. By the same token, efforts to conserve the forest and forest biodiversity may be incompatible with forest use. If the final objective for a species-rich area is the conservation of the full range of biodiversity, from a forest-oriented point of view, protection rather than NTFP extraction might be the most appropriate strategy (Ros-Tonen et al., 1995).

While the broad perspective of participatory and integrated natural resource management could function as an umbrella framework for all NTFP research, it is the perspective chosen and the objective pursued which will determine what research questions are relevant (Figure 2). From a

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2 The statement made by Dijkman et al. in this volume that research on the sustainability of non-timber forest product extraction has a threefold object – the people, the products and the forest itself – would suggest a third, product-oriented, approach. However, as most studies that focus on products are usually undertaken with a view to improving either the sustainability of their extraction or the economic feasibility of their production and marketing, I think that also the product-oriented studies fit into either the forest- or the people-oriented approach.
forest-oriented perspective, research will be primarily geared towards forest conservation and sustainable resource management. If a people-oriented approach is chosen, research will primarily aim to contribute to participatory management and improved livelihoods. Specifying the approach and objective will help to be more specific about the research questions that need to be answered.

![Diagram showing the link between forest and people with conservation of biodiversity and improved livelihoods as central themes.]

**Figure 1** Linking people and the forest: participatory natural resource management

### 3. REFINING THE RESEARCH QUESTIONS

On the basis of their specific experiences, all the authors have made suggestions for further research. The diversity of recommendations confirms that these suggestions have been formulated in line with the approach adopted (forest or people-oriented) and the objective pursued (biodiversity conservation, participatory forest management or improved livelihoods). Figure 2 attempts to synthesise the various options that have been put forward in this volume.

If the forest is taken as a starting point of research, the primary objective of NTFP research is to contribute to the conservation and sustainable management of the forest and its biological diversity. In this case, NTFP research focuses on the development of an ecologically sustainable extraction system. Research questions requiring an answer are:

- What are suitable animal and vegetable species for sustainable harvesting (van Andel and Reinders; de Jong; van Wieren)?
- What forest types are most suitable for extraction (Duivenvoorden)?
- What is the key ecological information we need for the sustainable extraction of plant and animal species (van Andel and Reinders; Caspary; van Valkenburg; Dijkman *et al.*; van Wieren)?
- What is the effect of extraction on the future availability of NTFP resources and its impact on biodiversity (Rodríguez and van der Hammen; Dijkman *et al.*; van Wieren)?

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3 The author’s names are given in the same order as their contributions. Their name is given where they explicitly recommend to dealing with the respective research questions or where their paper gives rise to such a recommendation.
**Figure 2** Options for objective-oriented NTFP research

* A& R = van Andel and Reinders;  D&W = van Dijk and Wiersum;  FW = Wiersum; HUC = Caspary;  JD et al. = Duijvenvoorden et al.;  JdB = de Beer;  JF = Forte;  JvV = van Valkenburg;  O&D = Overman and Demmer;  R&H = Rodríguez and van der Hammen;  SvW = van Wieren;  WA = Assies;  WD et al. = Dijkman et al.;  WdJ = de Jong.
- What harvesting levels can be regarded as sustainable (van Andel and Reinders; van Wieren)?
- How can extraction methods be improved (van Dijk and Wiersum; Caspary)?
- How can the production of timber and non-timber products be integrated into a sustainable management system (van Dijk and Wiersum; van Valkenburg; Wiersum)?

Taking a people-oriented approach, research may focus either on the development of participatory management models or the improvement of forest-dependent people’s livelihoods. If the former, NTFP research will focus on the recovery of traditional knowledge of managing the forest’s biodiversity and its application in participatory models of natural resource management. Relevant research questions here are:
- What cultural and ecological principles guide local models of natural resource management (Forte; Rodríguez and van der Hammen; Caspary)?
- What can we learn from indigenous knowledge and ways of managing the forest’s biodiversity (Forte; Rodríguez and van der Hammen; van Valkenburg; de Jong; Wiersum; de Beer)?
- How can these traditional principles, knowledge and management models be integrated in participatory and integrated models for natural resource management (Forte; Rodríguez and van der Hammen; van Valkenburg; de Jong; de Beer)?

If the objective is to improve people’s livelihoods through NTFP development, research can be supportive in securing forest people’s livelihoods by generating the information necessary to include forest-based livelihoods in land-use planning, forest laws and regulations and forest management plans. Important research questions here are:
- What forest types are the most suitable for NTFP use (Duivenvoorden)?
- Which parts of the forest form the territory of local communities and constitute their source of livelihood (Forte; van Andel and Reinders)?
- What other forms of land and forest use are being combined with NTFP extraction to make a living (van Andel and Reinders; Rodríguez and van der Hammen; Assies; Wiersum)?
- How do forest law and regulations affect forest-based livelihoods and what adaptations are needed to secure people’s access to land and resources (van Andel and Reinders; Assies; Caspary)?
- What management characteristics of NTFP production systems need to be known in order to optimally integrate these systems into sustainable management plans (Wiersum)?

In order to assess the viability of NTFP-based livelihoods, we also need to understand the social dynamics of NTFP extraction. Some important research questions here are:
- How does forest use change with increased incomes (Overman and Demmer; Dijkman et al.)?
- How does forest use change with increased employment opportunities (van Andel and Reinders)?
- How do actors change with increased marketing opportunities (Assies; Dijkman et al.)?

Last, but not least, research could provide insight into the options for optimised production systems in human-modified and man-made vegetation types, as well as into the marketing opportunities for NTFPs. In the case of animal NTFPs this implies that the opportunities for captive breeding need further study. This suggests the following research questions:
- How can NTFP production systems be optimised in human-modified and man-made vegetation types (de Jong; van Dijk and Wiersum; van Valkenburg; Wiersum)?
- What are the possibilities for domestication and captive breeding (Caspary)?
- How can new marketing opportunities be developed (Forte; van Andel and Reinders; Rodríguez and van der Hammen; Duivenvoorden)?
- What are the possibilities for realising more equitable commercialisation patterns (Forte; Rodríguez and van der Hammen)?
It will be clear that the several research options are mutually reinforcing. Participatory forest management cannot be realised without the ecological information that is gathered from a forest-oriented approach, nor can it be separated from proposals to optimise production in human-modified or man-made vegetation types. This objective-oriented framework makes clear that there is a challenge ahead for continued collaborative NTFP research for the benefit of tropical rainforests and the people who depend on them for their livelihoods.

4. ACKNOWLEDGEMENTS

I am grateful to Freerk Wiersum (Wageningen Agricultural University), Jelle Maas (the Tropenbos Foundation) and Sven Walter (FAO) for their valuable comments on an earlier version of this paper.

5. REFERENCES


