



# When theory meets reality – how to do forest income surveys in practice

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# Preface

Forest & Landscape Denmark is an active partner in the Poverty and Environment Network (PEN) research initiated by the Centre for International Forestry Research (CIFOR). Several PhD students and researchers have been involved in collecting total household income accounting data in Africa, Asia and Latin America, and this Working Paper summarises and presents their experiences. The focus is on practical issues of research implementation, while theoretical issues are discussed at length in several of the cited papers and PEN resources found at the PEN homepage at [www.cifor.cgiar.org/PEN](http://www.cifor.cgiar.org/PEN). The questionnaires for the research and the accompanying technical guidelines can also be downloaded from this homepage.

The main target groups for this paper are PhD and MSc students as well as others planning to collect structured survey data. The presented experiences stem from collection of total household account data in developing countries, but many aspects will be relevant for other types of surveys, and also in temperate settings.

The presented experiences were generated through data collection in approx. 2200 households in six countries on three continents: Bolivia, Guatemala, Ghana, Mozambique, Tanzania and Nepal. Data collection was undertaken as part of the following projects, most of which are on-going:

- Tropical forests for poverty alleviation – from household data to global analysis. Funded by the Consultative Research Committee (FFU) at the Danish Ministry of Foreign Affairs, 2007-10, Grant no. 104.Dan.8-933
- Community based natural forest and tree management in the Himalaya. Funded by FFU, 2003-10, Grant no. 104.Dan.8.L.716. This includes the two PhD projects
  - (a) The role of community forests in poverty alleviation: economic analysis of forest resource use, household income assets and policy outcomes and
  - (b) Management of high altitude forests in central Nepal
- Conservation by cultivation: linkages between an endangered endemic fir (*Abies guatemalensis* Rehder) and peasant economies in the western highlands of Guatemala, a PhD project that is part of the project Sustainable utilisation of greenery – an innovative tool to improve rural livelihoods and conserve endemic Central American firs. Funded by FFU, 2004-08, Grant no. 91160
- Forests, communities and poverty in lowland rain forests in Bolivia, a PhD project that is part of the Forest Management of Timber and Non-timber Products in the Tropical Lowland of Bolivia project. Funded by FFU, 1999-2009, Grant no. 104.DAN.8.L.714
- Welfare consequences of deforestation and forest degradation in Mozambique. Funded by University of Copenhagen and FFU, 2006-08, Grant no. 104.DAN.8-903

- Economic and political aspects of decentralised forest management in Tanzania. Funded by University of Copenhagen and FFU, 2004-07, Grant no. 104.DAN.8-860.

The following institutions have been involved in the data collection from which the present experiences are drawn: University of Copenhagen, Centre for International Forestry Research, Institute of Forestry at Tribhuvan University in Nepal, Forest Research Institute of Ghana, University of San Carlos de Guatemala, Escuela de Ciencias Forestales at the Facultad de Ciencias Agrícolas y Pecuarias at Universidad Mayor de San Simón in Bolivia, Faculty of Agronomy and Forest Engineering at the Eduardo Mondlane University in Mozambique, and the Faculty of Forestry and Nature Conservation at the Sokoine University of Agriculture in Tanzania.

Copenhagen, July 2008, the authors.

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# Summary

Previous methodological studies on total household income accounting based on structured surveys have primarily focused on the importance of coherence between theory and methods. That is, how to measure the right things, avoid double-counting, elicit and apply correct prices, and ensuring the use of standard definitions across individual studies to allow for valid comparisons. However, having a theoretically consistent survey method does not in itself secure production of high quality data. There are other, often overlooked, challenges. In this paper we draw attention to crucial factors in practical data collection, where theory meets reality, that can have major impacts on data reliability and validity. Based on our experiences from implementing structured household income surveys, using the approach developed by the Poverty and Environment Network ([PEN – www.penn-cifor.cgiar.org](http://www.penn-cifor.cgiar.org)), in approximately 2200 households in six countries (Bolivia, Guatemala, Ghana, Mozambique, Tanzania and Nepal), we identify a number of challenges and outline general recommendations and »best practices« to address these challenges.

Key challenges include: building community-researcher trust and respect from the beginning; selecting enumerators and research assistants; training of enumerators to facilitate their understanding and standardised, yet flexible, administration of the questionnaire; establishing trust and respect in the interview situation; promoting the adoption of best valuation techniques; promoting the use of easy-to-check triangulations; and continuously and consistently checking data during and between survey rounds for plausibility, thoroughness and falsification. The present working paper is primarily aimed at PhD and MSc students about to embark on structured questionnaire surveys in developing countries.

# 1. Introduction

Research on the role and potential of forests in preventing and reducing poverty is limited and can be considered an emerging field of inquiry. In recent years, a number of high quality publications has appeared (e.g., Cavendish 2000, Campbell et al. 2002) spurred by the realisation that the contribution of forests to rural dwellers in developing countries must be properly documented, and made visible, for policy makers to acknowledge and include forests in poverty alleviation strategies and policies (Vedeld et al. 2004, Sunderlin et al. 2005).

The global Poverty and Environment Network ([PEN – www.cifor.cgiar.org](http://www.cifor.cgiar.org)) was created on this basis. It is facilitated by the Centre for International Forestry Research (CIFOR) and aims to document the role of forests in rural livelihoods through systematic collection of high quality annual household income accounting data, including both cash and subsistence income from environmental, including forests, and agricultural resources in a variety of developing country settings. Data are collected through surveys using a set of standardised structured questionnaires eliciting information on household assets and incomes with recall periods of up to three months. PEN data are collected mainly by individual PhD students who all use the same definitions of concepts and variables and the same methods in data collection. This allows for analyses across the total PEN data set. The PhD students pursue their individual research objectives complementing PEN; the network currently comprises more than 35 studies covering more than 8,000 households in 26 countries in Africa, Asia, Central and South America.

The structured household income survey method based on recollection, the basis of the PEN approach, is and will in all likelihood remain an important tool in development studies. Hence, it is relevant to evaluate this method with an aim to improve its strengths and minimise its weaknesses. Previous methodological studies like Cavendish (2002) and Vedeld et al. (2004) have primarily focused on the importance of coherence between theory and methods. That is, how to measure the right things, avoid double-counting, elicit and apply correct prices, and ensuring the use of standard definitions across individual studies to allow for valid comparisons. The meta-analysis of 54 case studies by Vedeld et al. (2004) demonstrated that such methodological fundamentals pose a challenge to researchers and others engaging in household accounting through structured surveys. There are, however, other challenges. Having a theoretically consistent survey method does not in itself secure production of high quality data.

During implementation of the survey several challenges arise when theory meets the reality of respondents whose experiences and knowledge is the source of our desired data. The methodological concerns mentioned above, for instance, do not assure that trust is built between the individual respondent and enumerator, with potential consequences for the validity of the

information elicited. Other important aspects in relation to data collection often not considered by methodological papers is that enumerators act in interview situations, that are difficult to standardise entirely, and that they may be faced with respondents providing incorrect information. The issues we are pointing at here concern the reliability and validity of the data produced from application of theoretically sound structured surveys that in fact measure the desired construct.

Standard definitions define reliability as »the extent to which a measurement procedure yields the same answer however and whenever it is carried out« and validity as »the extent to which it gives the correct answer« (Gorman et al. 1997:57). Reliability is thus linked to repeatability whereas validity is linked to truth, and data can be reliable without being valid, but not the other way round. This standard definition of reliability is arguably better suited to data collection in situations with a high degree of predictability and control than interviews involving different types of respondents, initial mistrust to be overcome, busy time schedules and sensitive issues.

The essence of this paper is exactly that the quality of the data collected often depends on how and when. Hence, in this paper, reliability is defined as »the extent to which a measurement procedure yields the same answer when carried out in the same way«. A measurement is carried out in the same way when conducted using the same method in the same place at the same time. The challenge is to be aware of which factors that can be changed during interview and which can not, i.e. to understand the consequences of changes. A structured survey instrument minimises the problems of reliability inherent in qualitative research while still depending on enumerators to categorise data. Additionally, enumerators have to be able to balance the need for interviews to proceed in a friendly and respectful atmosphere with needs of standardisation (e.g. adhering to question order and standardised probes).

Obviously, having a theoretically sound survey questionnaire that measures all the relevant parameters in relation to the desired construct is the first step towards assuring reliable and valid data, but an exclusive focus on this issue overlooks the crucial implementation phase, where the methods meet reality. Systematic differences in results from student theses and »professional« research on forest incomes indicate, perhaps not surprisingly, the importance of variations in researcher experience, institutional and technical backup, the duration of field work periods, funding, and focus of studies (Vedel et al. 2004: 44). These factors of course need to be discussed, but others remain that have received almost no attention till now. Reports on empirical household accounting studies rarely provide any information on how reliability and validity of the collected data were evaluated and what the outcomes of these evaluations were. With the present paper we draw attention to crucial factors of practical data collection (such as the interview situation, the enumerators, the nature of the relation between researcher and respondents) with potentially large impacts on data reliability and validity.

This paper focuses on the practical difficulties of implementing structured household income surveys for theoretically correct total household accounting, with a focus on consequences for the reliability and validity of the collected data. Based on our experiences from implementing the PEN survey in approximately 2200 households in six countries (Bolivia, Guatemala, Ghana, Mozambique, Tanzania, and Nepal), we describe a number of challenges and we outline some general recommendations and »best practices« to address these challenges.

This working paper is primarily aimed at PhD and MSc students about to embark on structured questionnaire surveys in developing countries. While our experiences are based on implementing PEN research we believe the resulting guidelines will be of general use for any student reflecting on the reliability and validity of research data. In the following, we first briefly introduce the PEN research design. Then challenges arising during implementation of such research, together with our recommendations for how to address them, are presented in chronological order: pre-field work, field work, and post field work. Finally concluding remarks regarding the key lessons learned are provided.

## 2. The Poverty and Environment Network (PEN)

PEN is a collaborative research effort that aims to collect comparable high quality data on forest income across tropical and subtropical regions by means of structured total household income surveys implemented by individual researchers that have committed themselves to adhere to the project's research methods. The overall research questions of PEN are:

- what is the current role of forests in poverty alleviation?
- how can that role be enhanced through better policy formulation and implementation? (PEN technical guidelines 2007)

The backbone of the project is a common research method including standard questionnaires (PEN prototype questionnaire 2007) that are devised so as to capture data related to the role of forest and forest products for households living in different forest environments and under different institutional arrangements and market contexts. One researcher will thus focus on only some of these contextual factors and comparisons will be made by pooling the data. Specifically, standardised information on cash and subsistence incomes from all major sources during one full year is obtained through collecting data on amounts of products and services collected, sold or purchased, costs incurred in processing and marketing, and prices.

Technical guidelines (PEN technical guidelines 2007) support the implementation through specifying, among other, the meaning of each question in the questionnaires, definitions to be adhered to (e.g. of the term »forest«), and codes for products (PEN codes 2008).

The PEN data collection framework encompasses three types of surveys (PEN technical guidelines 2007):

- Two village surveys; one to be conducted at the beginning and one at the end of the data collection period.

The first collects information on climate variables, demographics, infrastructure, land use and tenure arrangements, and basic information regarding the forest resource base and forest institutions.

The second collects information on climate variables, occurrence of village level risks, wages and prices, and village level payments for forest services during the survey period.

- Two annual household surveys; one to be conducted at the beginning and one at the end of the data collection period.

The first collects information on household composition, assets, access to forest resources, presence of and relation with forest institutions, and markets for forest products.

The second collects information on assets, household level crises and unexpected expenditures, payments for forest services, welfare perceptions and enumerator assessment of the general validity of the information.

- Four quarterly household surveys; one to be conducted each three months implying a field work period of 9 months and a recall period of 12 months. Each quarterly survey uses the exact same format to collect information on major products collected, processed, consumed and sold. Recall periods are three months and 30 days to capture both seasonal events and detailed information.

## 3. Pre-field work

After formulating your research objectives, research questions and possibly even hypotheses, it is time to start planning and preparing the data collection. Although it may sound trivial, being thorough at this stage can save much trouble later, and we here outline how the preparations could ideally be undertaken to ensure that the data collected are of high quality. You have likely thought of several of the aspects mentioned here yourself, but as our experiences show many things demand your attention at this stage of the research and a check list can be quite useful.

### 3.1 Selecting the research site

The selection of research site is the first of many crucial decisions to be made that will have implications on the quality of the conclusions to be made from the research. The PEN Technical Guidelines outline the need for considering whether a research site is representative, meaning that conclusions have bearings beyond the specific site, and whether it provides sufficient variation in key variables allowing you to make inferences. And of course forest products must play a role in the livelihoods of the inhabitants for an area to be selected (PEN technical guidelines 2007).

A potentially important aspect to consider is the historical or current presence of (development, conservation or research) projects in proposed research sites. Following in the footsteps of projects can be an advantage as it »might cater for acceptance and understanding of the research« (Shackleton et al. 2001:132), and as some knowledge about the area might exist for you to build upon. Previous projects may, however, also have left a heritage that can become a liability to your research. Communities that have hosted many projects without seeing tangible benefits or devolution of research results might display »respondent fatigue«.

Another risk is that the households, having participated in surveys and PRA and RRA sessions before, believe they know what the researcher wants of them and provide answers accordingly rather than considering

#### Box 1. The influence of projects on your research

In Tanzania, an income survey for total household accounting purposes was implemented during 2005 in four villages that had implemented a community-forestry scheme under the auspices of a Danida funded project 1999-2003. Hence, the four villages had recently been subject to awareness raising concerning the importance of forest conservation. They had implemented a local forest management and monitoring system, implying a strong focus on curtailing illegal forest uses. This focus on legal versus illegal forest uses provided a challenge to the implementation of the survey as people were very reluctant to reveal clandestine forest uses. On the other hand, the presence of a project in the near past ensured good rapport with local authorities and an easy introduction of the research to the village community.



the specific purposes and questions. Furthermore, conservation oriented projects that highlight the importance of forest or biodiversity conservation may have induced more secrecy and covertness surrounding the use of natural resources. This can inhibit the willingness to share information. Therefore, it is wise of you to investigate what heritage previous projects have left in a proposed research site, and what the focuses of current projects are.

The remoteness of the research site may be subject to discussion. Natural resources may play a larger and more varied role in the livelihoods of households situated in remote areas, but the increased costs and logistical problems of accessing such areas could potentially compromise data quality. For example, if planned survey rounds cannot be implemented within the specified time, problems of overlap or gaps in recall periods arise. When selecting the research site you therefore need to be clear about the challenges it presents to the practical aspects of research implementation. For example, time needed for transport, roads being inaccessible parts of the year, seasonal peak periods of labour demand, etc. You need to have a feasible plan for addressing all the foreseen challenges, and then you need to consider implications of unforeseen challenges like funerals or other calamities. A strategy can be to choose two or more communities close to each other, as this may allow you to move between the communities in case a community-specific calamity puts a stop to your activities.

#### **Box 2. Site selection – the art of the possible**

In Nepal, PEN surveys were implemented in three sites during 2005-2006. Sites were selected in 2004-2005 when armed insurgencies severely affected the stability of the country and the free movement of civilians. Selection criteria therefore, in addition to standard criteria such as forest type, included practical accessibility and security considerations, resulting in successful data collection although not in all the first-best sites.

Another logistical consideration in relation to selection of research communities is that villages might not be the best unit of sampling. In some areas, villages are divided into hamlets, some of which may be situated quite far from the village centre and have rather different livelihood strategies compared with those from the village centre. Hence, choosing a village and making a random sample within it implies the risk of travelling very far for a few households, which inevitably entails high costs. In such areas, it might be advantageous to make the random sample at the level of the hamlet rather than the village. The selection of hamlets may influence results, though, and a conscious approach needs to be adopted and explicitly described.

## 3.2 Approaching the research site

First impressions last. In addition to being well prepared and clear about the intentions of the research when first visiting potential research communities and individual households it pays to respect local customs and invest the time needed for building a good relation to the community. Clear information on the purposes and short vs. long-term benefits of the research will go a long way in facilitating local accepts.

When first approaching a community you should make sure immediately to identify key authorities and individuals. You will need to inform them about the intended research and seek their approval before starting. If you are exploring a site for possible future inclusion in the research, be careful to inform that selection is not yet final. During the first visit, investigate if you can get in touch with the community at distance – this might save you from going back with the single purpose of informing that the site was not chosen and would be valuable in relation to planning of future visits. Once the site has been confirmed for selection from both parties, the process of trust building and planning should be initiated. This includes explicit two-way discussions of expectations: what do you expect from the community and what does it expect from you.

### Box 3. On the importance of following local procedures from the very start

In the Ghanaian PEN survey, the research team decided to train enumerators in the first community that would be part of the survey. On the first day of arrival, the team asked a local leader to inform the other local authorities of the purpose of the research and that enumerator training would be initiated. The team leader was known to the community leadership from previous research activities and communication was relatively informal. On the second day, the training exercise was interrupted by a quarrel between the local chief and members of the community committee. The chief was aggravated that he had not been informed about the arrival of the team, but had been told by other community members that people from a gold mining company had arrived and were asking people about their assets and land ownership in order to be able to calculate compensations in the case of evictions because of mining activities. The area had recently been investigated by a mining company. The team leader immediately explained the purpose of the research and sought to mediate the conflict. In the end the chief was satisfied with the apologies, but the rumour concerning our purpose being gold mining had been running in the community for more than one day because the chief could not immediately dispel it and people had become rather suspicious about our purposes.



Expectations would depend upon the local context, but there are some basic formal and informal principles which are wise to consider:

- Formally, it is important to get a clear and unambiguous permission from the community leadership to initiate the research. This needs to be based on a dialogue concerning the objectives and form of the research. Use the necessary time to identify all formal and informal institutions and nobilities in the community and to make a courtesy visit and/or go through any locally common procedures to ensure that you have paid the necessary respect to all parties. Offending local authorities and/or nobilities inevitably brings trouble.
- The broader community needs to be aware of the permission from, as well as the dialogue with, local authorities. In relation to this, it is particularly important to clarify both parties' responsibilities and expected benefits from the research, including what research outputs should be disseminated to the community and how the community should support the research. It might be valuable to specify these things in writing, e.g. in a form of contract or declaration of intentions. In some areas, however, such formalisation might not fit the local context.
- Informal building of relations is as important as the formal procedures. In addition to being common courtesy, showing interest in the local setting and respondents is likely to yield better research results. Displaying a good, positive and open attitude is important, as outside guests will be the centre of attention from all sides. Hence, small issues as what you wear, how you talk, what you say, what implements you carry with you, etc., become important. Remember that first impressions last. Take the necessary time to talk informally with people, and share personal infor-

#### Box 4. Formalising agreements in Guatemala and Bolivia

One of the most common community-level features in the western highlands of Guatemala is the strong social networks. In one of the townships included in the PEN survey, the local leaders requested the signing of a formal document. Consequently, the project committed itself to deliver certain services in exchange for the desired data. These services were mainly provided by a bachelor student stationed in the field who came up with a forest inventory, a map of the village, and a number of training workshops during his 10-months stay. Gaining the back-up of the local authorities certainly helped the enumerators carry out their tasks, and providing these services to the community brought about a friendlier working environment for our research. Finally, the bachelor student actually facilitated a number of inter-organisational efforts to improve forest management and conservation in the area.

Potential research communities in Bolivia were suggested during discussions with many actors, such as forest projects, forest associations, and local and regional organizations. Negotiations with each of the potential communities were held to present research purposes and get permission for the research. The idea was to collect data that would be useful to both communities and researchers, e.g. in connection to elaboration of Community Forest Management Plans. This required acceptance from different local organisations such as the association of municipalities. In each community, local authorities were visited. After that, the research team participated in the monthly General Assemblies of communities. During the Assemblies the research project objectives and outcomes were outlined and discussed with community members. After questions, answers, and deliberations the permissions were given. After three months of negotiations the team could commence research in six communities. All agreements were written down.

mation about yourself to assure that you are seen also as a person and not only as a researcher. Be careful about gender issues; in some places women have different roles and attitudes than men. You should not necessarily fall into such roles, but you should at least be aware of them.

- Respect the local community by showing interest and understanding of the area as well as being serious and well prepared, for example bringing maps and aerial photographs of the area. Also, try to be very precise when planning meetings (time, place and who should participate). Avoid that too many people from the community have to spend time in long meetings where their presence might not be needed for more than courtesy reasons. There is a clear trade-off here between »wasting« too many peoples' time and assuring the spread of correct information about your research to as large a share of the community as possible.

#### **Box 5. Communicating intents clearly – the risk of missed opportunities**

In a Nepalese PEN survey, the socio-economic data were supplemented with information on the state of the adjoining forest resources. As grazing was visibly causing problems for forest regeneration the research team wanted to establish small fenced plots for measuring the effect of grazing. The intent was not communicated clearly to the community, however, who believed the plots would be large and that they would restrict their access to grazing. Though the issue was resolved at a community meeting, the establishment of the plots was cancelled as the researchers judged fenced plots to be contentious, especially after the first misunderstanding.

### **3.3 Setting the research team**

Research is rarely a one-man-show. When undertaking systematic collection of total household accounting data you need to have a large number of observations. There should be no illusions here – there is no way you can possibly survey 200 or even 100 households alone for four consecutive quarters. You will need enumerators, and possibly a research assistant that can help to supervise the enumerators as well as perform other tasks. Apart from being a researcher you also become a project manager.

#### **3.3.1 Local versus external enumerators**

The first thing you have to decide upon is whether to use local or external enumerators. The advantage of using external enumerators is that you can employ people with higher education, which could increase the quality and reliability of the data, although also possibly at a higher cost. The disadvantage is that you introduce some logistical problems into the project and new people who, like yourself, have to spend time and energy gaining local trust and insight into local conditions. The logistical considerations should not be underestimated: your survey villages may be remote and this might reduce the time you and your enumerators stay in the area, unless your enumerators work there on a permanent basis during the survey.

The advantage of using local enumerators is that you immediately »buy« yourself access to local information (but you may also get some local biases

as part of the package). Local enumerators can tell you about the main income activities in the area, including the illegal ones. The disadvantage is that the educational level of your enumerators may be lower, possibly implying more time to be spent on training. You may risk that the reliability of the data is lower than if you had used external enumerators, as local enumerators may have difficulties in correctly recording more complex situations. Although a quite comprehensive structured questionnaire is used it cannot possibly encompass the variety of income situations local enumerators are confronted with during the survey. More time may therefore be needed to assure the quality of information and making sure that it is correctly recorded. Also, the potential drawback of using local enumerators, is that some respondents may be reluctant to reveal sensitive information to people from their own neighborhood. On the other hand, local enumerators may know the income sources of some of the sample households, thus allowing for validity checks during data collection. So it is a trade-off. Depending on the budgetary limitations you could use a combination of local and external enumerators to increase both reliability and validity.

### **3.3.2 Local enumerators and local power relations**

When employing local enumerators you are introducing employment opportunities in the local communities. This will often attract the attention of many people, including more influential ones that might see an opportunity to provide a job for their friends and family. This poses a challenge: you want to stay in good relation with the local leadership while avoiding interference with your survey. What to do? The short answer is that you should not allow local leaders to influence your employment of local enumerators. Giving away decision-making power to people whose interests are not aligned with yours will only bring problems. You risk getting people who think they have a special status and that they are not required to do the same workload as other enumerators. You risk getting dishonest people. You risk getting people with a lower human capacity, etc. Recruitment of enumerators should always be transparent – you get the people with the required capacity and the process induces team work and group spirit. Enumerators who know they have been selected based on their abilities, including good analytical and interpersonal skills, will engage more enthusiastically in their work than a group formed partly by local interests. Local leaders may become dissatisfied with your decision and confront you. You should deal

#### **Box 6. Selection of local enumerators in Nepal**

In the Nepalese study, selection of local enumerators was done with support from the local communities. One of the sites consisted of scattered hamlets covering a large area, and a community meeting was asked to suggest names of potential enumerators meeting criteria set by the researchers: (i) minimum level of education (above class 10); (ii) commitment to work in all four quarterly surveys; (iii) interest to work; (iv) representation from all classes, castes, both female and male, and all hamlets; and (v) preferably with some experience of similar work. The employed enumerators had been given a mandate by the community and they clearly felt obliged to live up to the expectations. Furthermore, the enumerators were asked to choose the households from the sample list whom they already knew and felt comfortable to interview. In the beginning of the survey the quality of their work was rather low, but after only 2-3 days of guided interviewing their performance dramatically improved.

with this situation by being polite but firm. In all cases, recognizing and respecting local leaders and customs is the way towards reconciliation.

### **3.3.3 Enumerator skills**

We generally found that young enumerators are more flexible and eager to learn, but that being young can be a challenge when approaching elderly respondents. Educational level is, however, important – your enumerators should be able to calculate and write down information quickly. But these are not the only criteria for selecting enumerators. Most importantly you want your enumerators to possess good communication skills and show integrity in their work. You can get a good feeling about these characteristics by observing how the enumerators interact with other people and you. Are they polite, do they show respect, are they not shy, etc. Observing their personal characteristics will give you a good intuition if they can become good and honest enumerators. Therefore, do not select your enumerators on the basis of graduation papers only.

Gender issues should not play a central role in selection of enumerators – though this may be relevant if certain issues can only be asked by a male or female. This is rarely the case. Unfortunately there may be cultural barriers that make it difficult to find good female enumerators. In some places, it is simply viewed as an unsuitable job for women. This may make many women feel uncomfortable doing this kind of work and hence regrettably less suited for the job. Good starting points when finding enumerators are institutions such as schools, churches or local NGOs.

One important issue to consider is to ensure that, as far as possible, the same enumerator visits the same individual household throughout the year. The benefit of this is that the household and enumerator will build up mutual trust, and that the enumerator will get to know the household's overall livelihood situation; this is useful for triangulation. In all our studies there were changes in the enumerator group during the survey – and the general perception is that it negatively affected data quality. One way to avoid this is to make a full year contract when setting the research team and compensate enumerators during the between-survey periods. Be sure to critically question whether the enumerator will actually be able and willing/motivated to fulfil the contract (see also next section).



### **3.3.4 Local assistant**

A local assistant can be the most vital member of the research team. If you are fluent in the local language you might not need a local assistant, but assistance with field work planning and supervision of enumerators can be valuable. A good research assistant can enable you to solve several problems at a time and cover when you get sick. A trusted research assistant can also provide valuable support in situations of conflict or discussions and negotiations with enumerators, respondents and/or local authorities. Finally, a good assistant can be a valuable partner in discussions about practical or methodological challenges. You may find her/him among recent graduates from agricultural/forestry universities, or through local NGOs working with natural resource issues.

### Box 7. On the value of having a trusted research assistant

In the Tanzanian survey, the researcher had two highly trusted research assistants with a very high level of understanding of the purpose of the research. This proved valuable in several respects. At certain times the ability of the research assistants to work independently and direct the enumerators implied that the researcher could attend to other issues – such as local leaders seeking to interfere with the survey because of a lack of understanding of the purpose – without putting a stop to the survey. At times the trusted assistants' knowledge about local customs and politics also enabled them to foresee and pre-empt crises before they became a liability to the research.

### 3.3.5 Motivating and training the research team

Enumerators are influenced by many motivation factors; and the relative importance of these factors varies across enumerators. Some are in it for the money, others for the CV value or contacts, and again others to learn and gain experience on socio-economic surveys. (Hopefully none are in because of their influential connections, see 3.3.2). Other potent motivation factors are trust, responsibility, and praise and acknowledgement when having done a good job. You should try to use all these individual motivation factors consciously.

The salary has to be locally perceived as good or at least fair. Be careful not to give too much in salary – you distort the market and increase expectations. And a higher salary does not necessarily imply larger commitment from your enumerators. Also, high salary levels can lead to envy and conflict within communities, especially if using local enumerators. You have to find a balance. A good starting point is the local wage rate or the national minimum salary: set your salary above these figures. Remember to include extra pay for week-end work.

The contract should also include some incentive mechanisms. Most importantly you want to keep your enumerators throughout the survey. You can



do this by paying them a monthly salary throughout the survey (even in the months where they are not working). Payments should, however, only be provided after completion of each survey – so you pay your enumerators four times in total. After successful completion of the survey you could also include a bonus. Another benefit from full-time employment of your enumerators is the possibility of having them working on extra survey activities, between survey periods, such as: triangulation of information; consistency checks; data cleaning; data digitalisation; and gathering of extra data such as unit standardisation and price surveys. Remember to make a contract for each enumerator where conditions and requirements of the work are spelled out clearly.

Assuring a continued good and common understanding of the questionnaire by all the enumerators involved is vital. Hence, initial training and continued supervision of enumerators throughout the survey is mandatory. This implies that a high enumerator-researcher ratio can be impractical, unless you employ research assistants that can perform supervision. A supervisor-enumerator ratio of 1:3-4 seems to work well. The introduction of research assistants with supervisory functions, however, also implies extra costs and the introduction of an extra potential source of bias. Research assistants also need training and supervision. An important part of training is to let enumerators (and research assistants) gain their first experiences with the questionnaire by testing it on each other.

### **3.4 Getting local context information**

Before you can start working systematically in a research site you need to get an overview of the local context. Introductory meetings should set the scene in which information about the village, natural resources, and local livelihood strategies is obtained from key informants. Guidelines regarding what information to collect for this village narrative are provided in the PEN Technical Guidelines (2007). Large group meetings should generally be avoided as you risk using much time on formalities while wasting the time of the ‘audience’. Hence, it is often better to have 2-3 separate and smaller meetings with different relevant stakeholders in the village, which will provide for a more nuanced picture of the village and for triangulation of the obtained information. Information can be further validated through meetings with local government and NGOs present in the area.

A seasonal calendar should be prepared that covers seasonal timing of: harvesting of major agricultural, forest and non-forest environmental products; the agricultural season; livestock movements (important for herding patterns, products from livestock, etc.); peak labour intensive periods; all major cultural and livelihood events, e.g. holidays, larger meetings, festivals, and seasonal migration of humans. Care should be taken to obtain first hand information from the resource collectors and processors rather than only relying on village meetings. In particular, the calendar should cover periods for harvesting of environmental products with short or seasonal collection periods, which might include mushrooms, fruits, fuelwood, and leaf litter.



In many high altitude areas in Nepal, for instance, mushroom collection takes place during the monsoon and the fuelwood collection during winter. Surveys soon after these collection activities assure that the quantities are fresh in memory, which, inter alia, provides for higher validity. In addition, knowing the seasonality of such products is useful for enumerators as background knowledge allowing them to ask the right probing questions. Planning surveys to occur immediately following such special harvesting periods also allows for unit standardisation.

A very useful exercise before initiating the survey is to produce a local map of relevant resources and features in the community or village area. This will give you important information about the location and tenure of forests, grazing areas, etc. You can bring large size photocopies of an aerial photograph to aid this activity.

The decision on when to start the PEN survey can only be made after gaining some background knowledge on local livelihood strategies, including

#### **Box 8. How to avoid double-counting from overlaps between survey rounds**

In Tanzania, the agricultural harvest in the survey year 2005 extended over several months and was covered over two quarterly interview rounds. This provided a particular challenge to the researcher and enumerators as, for some households, parts of the harvest was recorded in one round (for specific crops or field plots). To avoid double-counting, the harvest that was recorded in the first round was pre-printed on the questionnaire – using the »Mail merge« function in »MS Word« – for the next round. This principle proved very valuable and was extended to the next rounds with information on sale of crops, implying that in the fourth and last round, the enumerators and respondents together made the »final account« of the harvested products, looking at whether what was left in stock at the household fitted the amount harvested, sold, given away, received as a gift, and a reasonable consumption during the year.

major seasonal activities. A general rule of thumb is that the survey should be initiated immediately after the main agricultural harvesting season. The main agricultural harvest is an important component of livelihood strategies and may influence other livelihood activities in the remaining part of the year. Hence, having knowledge about the harvest from the start of the survey will allow you to draw inferences on what activities households are likely to pursue. In addition, starting the survey after the main agricultural harvest could relieve other problems as described in Box 8.

### 3.5 Sampling households

The PEN technical guidelines (2007) specify that households must be randomly sampled from the entire population. The reason is that criteria used for stratification are of local importance and cannot be used for drawing general inferences at global and regional levels. However, if the population is heterogeneous and relatively small random sampling may imply a risk that some groups are left out. As suggested by Vedeld et al. (2004), in such cases a stratification of the population based on wealth, market access or types of forest management can be applied. Within the individual stratum then, random selection should be applied. If stratification of a relatively large population is necessary for a case specific analysis, this could be combined with random sampling from the entire population by subsequently adding households for underrepresented strata.

The sampling frame is the complete list of households in the research site. Official lists are likely to be incomplete due to recent changes and/or infrequent updating and therefore you need to carefully prepare your own list of households using one or preferably more reliable source(s) combined with field verification. To do this, however, you need to define the sample frame properly, e.g. the village territory. This can be a really tricky task. In remote areas, population densities may be low and households may be settled in small clusters, meaning that you may be unable to find the required number of households in one or two clusters. In such areas, a village or community may include a large number of such small hamlets scattered over a large area. To avoid too scattered a sample, you may randomly select households at the hamlet level in a number of hamlets within the village/community, but while practical this approach introduces a potential bias. Another way to deal with the situation is to define your own village territory. Choose the largest hamlet and include hamlets within a reasonable walking time (<2 hours) in order to get a sufficient number of households from which the sample can be drawn. The village boundary can be drawn later by using GPS or other land features identified in aerial photographs or topographical maps.

Having sampled the households in a village/community, it can be a very valuable approach to plot the households on the community map (e.g. using GPS). This can be used to efficiently divide the households between the enumerators to avoid too much walking back and forth. Having in mind that enumerators should preferably interview the same households through-

out the survey, doing this right the first time can save a lot of time and costs.

### **3.5.1 Delimiting households**

Having sampled households, an important task for the first meeting is to define the limits of the household, i.e. who belong and who do not. In the PEN studies, a household is defined as »a group of people (normally family members) living under the same roof, and pooling resources (labour and income)« (PEN technical guidelines 2007: 21). In the Nepal study, this definition was made operational by including all individuals, regardless of family relation, supplying labour, living and eating with the household for more than six months, whereas kin members who live outside the house for more than six months were excluded. Deciding who belongs and who does not can contrast with respondents' feelings of family ties, and it is important to explain the reasons for excluding family members from the research household definition to avoid resentment. Polygamous households comprise a particular challenge to household surveys. The PEN technical guidelines (2007: 22) suggest that »if a man has several wives, each living in separate houses, then each of the houses of the wives should be treated as a separate household, and the husband's contribution to the particular household should be included. If the sampling is based on selecting household head, and a male household head with two households is included in the sample, one should include both households and register them as two separate households.«

In the Tanzanian study area, polygamous households were quite common, and a number of such households were included in the sample. If the name of the husband having several wives appeared in the sample, the issue was solved by including in the survey only the household where the husband stated to spend most time. If the name of one of the wives in a polygamous household appeared, the same procedure applied to decide whether the husband should be counted as part of the household or as someone submitting remittances to that household. The assets of the husband heading a polygamous household were shared between the spouses' households according to his statements.

## **3.6 Preparing the questionnaire**

PEN provides a standard prototype questionnaire that must be followed by all PEN researchers; the prototype is adapted to the local context using information collected, e.g., through the first village survey.

### **3.6.1 Translation**

Whether or not the adapted questionnaire should be translated into the local language(s) will depend on the local language traditions. If English is locally readily understood only translation of technical terms may be needed, whereas in other areas translation and usage of the local scripture are vital for enumerator understanding and thus the quality of the data. Translation should be undertaken by the researcher, if possible, or in collaboration with

local researchers. The translation process should be documented in writing. Translation is finalised only after testing the questionnaire in the field (see below) and having collected information on specific products to be added in the tables of the questionnaire.

### 3.6.2 Triangulation



The PEN prototype questionnaire provides several opportunities for triangulating the information provided by respondents during an interview. This is not specified in the technical guidelines but should be prepared by the individual researchers so that it can be directly used during interviews to clarify misunderstandings and omissions. One example is the possibility for the enumerator to quickly calculate and compare total cash incomes and expenditures during the three months recall period. Knowledge about the household from the first annual household survey or previous quarterly surveys also enables enumerators to verify information. For example, types of incomes can be anticipated when knowing the household assets (e.g. a household owning a plough and oxen is likely to have income from renting them out during the ploughing season). And types of income reported in one quarter may be anticipated in the next quarters too (Box 9).

Practically, knowledge from previous interviews can be brought as brief standard reports typically extracted from a database. Although it is tempting to include many details and triangulation questions, an overarching concern should be to ensure that the single interviews do not become too long and strenuous for respondents and enumerators. This is especially important in surveys where households are asked to participate in repeated interviews.

#### Box 9. Triangulation using information obtained in the survey

- Household assets are strong predictors of income sources. Having recorded ownership of items such as scotch carts, ploughs, oxen, shops and various tools should lead the enumerator to check carefully from income derived from sources related to such assets.
- Household member skills and general livelihood strategies should be elicited in the first survey round to provide a check list for later survey rounds. Knowing ex-ante that a household member is a carpenter, house builder, charcoal producer, bike repairman, herbalist, etc., is valuable in later survey rounds to assure that the income is elicited.
- The household income situation – food storage in particular – is a strong predictor of non-farm income earning activities. Hence, knowing whether the particular household has enough food in storage to last until the next harvest is valuable information.
- Household religious beliefs can be an important predictor of unwillingness to reveal certain information, e.g. the use of traditional medicine or income from certain businesses. Hence, enumerators should be more careful and critical about the information surrendered by religious households on such items.
- Asking households about cash costs and own consumption of various items, e.g. agricultural produce, can be a good way of triangulating information on savings, cash income, and agricultural storage and harvest.
- In general, the information obtained in previous survey rounds is a good predictor of the information that should be obtained in later rounds. Hence, enumerators should be suspicious of households that suddenly report very different incomes, and where the change cannot be explained by seasonality or some other natural cause

### 3.6.3 Recollection periods

When deciding on length of recollection periods, items which are important to the study objectives, e.g. major income contributions, need to be covered. Hence, three months may be necessary for items that occur in discrete, rare and irregular instances, e.g. the income from selling charcoal from two large charcoal kilns during the year or collection of products which are only harvested in short intervals at special times of the year such as mushrooms or berries. Box 10 provides data from the Nepal study, where both one and three months' recollection periods were applied to check what differences appeared. These results illustrate that short recollection periods capture more products, but used alone and quarterly they are likely to miss products collected during short and intensive periods.

#### Box 10. The importance of recollection periods

The Nepal study included a test of recollection periods. Households were asked about environmental incomes both within one month and within three months prior to the interview. The income estimated from one month recall is consistently higher than that from three months. As the table shows, the difference between one and three months' recollection is quite high in the aggregate figures for direct forest income (unprocessed products), forest derived income (processed products) and environmental (non-forest) income. The results are in accordance with our expectations – that longer recall leads to lower income estimates because people forget their incomes. But the magnitude of the difference is perhaps surprising. Some of the difference may be because income from rare events is generalised to three months; this suggests that data collection instruments should use three month recall periods for rare and major products and one month recall for ordinary and minor products.

*Quarterly forest and environmental income figures elicited with different recall periods.*

Income type	Recall period*	Min	Max	Median	Mean	Stdev
Direct Forest Income	1 month	30	327,720	3,300	7,152	18,877
	3 month	18	112,060	2,845	4,808	8,229
Forest Derived Income	1 month	15	790,500	1,500	10,791	51,788
	3 month	10	263,500	1,000	4,605	17,483
Environmental Income	1 month	15	36,165	675	1,565	3,198
	3 month	5	37,500	300	846	2,434

\*Amounts from one month's recall were multiplied by three to yield quarterly estimates.

### 3.6.4 Testing

Testing of the locally adapted questionnaire should be carried out in an area similar to the research site, preferably not very far from it. Testing is necessary to ensure that the questions and pre-printed product categories fit the local context (see Box 11); to verify that the words and phrases used in the translated questionnaire make sense locally; as a trial run for the enumerators (on top of the experiences gained during training); and to try using the format in the field – are the questions printed in a manageable way.

The test is a good opportunity to make the enumerators acquainted with good practices when doing the survey. Enumerators should receive sufficient training to allow them to become totally familiar with the questi-

### Box 11. The challenges of recording income from businesses

For some rural households, income from small businesses comprises a large share of total income. In a socio-economic survey like the PEN, you will normally encounter a huge variety of small businesses with regard to type, size and fluctuations in income over time. It can be quite a challenge for your enumerators to see through the structure of a business activity and get all the cost and income components right. Therefore, it may pay off to pay special attention to small businesses and make sure that the most common businesses are discussed in plenary with the team. In the Tanzanian survey, for instance, there were a number of very common small businesses with cost and income structures that only varied little among the households depending on them, such as brewing of beer, bike repairing, transport by bike, and cooking of various foods and snacks. Hence, developing a »common« approach to eliciting the incomes and costs for these businesses, and to what income and cost items were simply too insignificant to bother asking about them, saved a lot of time and effort as well as removed uncertainty and insecurity among the enumerators.

onnaire and the widely differing issues and challenges that appear when implementing them in the local context. In addition, however, enumerators should be enabled to use the questionnaire in an open and less structured fashion. To be able to establish a less formal atmosphere during interviews, enumerators should be able to implement the surveys in a fashion more similar to semi-structured interviews. This, however, poses great demands on the enumerators' interview skills and rehearsals are needed.

#### 3.6.5 Duration – questionnaire length

Our experience is that the individual quarterly interview duration fluctuates between 25 minutes and 2½ hour. We find that the optimal duration is less than one hour – implying that questionnaires should be designed so that the vast majority of interviews can be completed within this time.

A practical way to structure your approach to the survey situation could be splitting the information into items that can

- be observed,
- be asked about directly in a survey form, and
- would be better revealed during a less direct approach, i.e. through an unstructured interview approach.

Direct observation relieves the respondent from answering questions and may shorten the interview. The survey approach is fast and effective, but sensitive issues might demand a more indirect approach to result in good information.

#### 3.6.6 Remember all costs

In addition to all field work costs (such as for local transport and enumerator salaries), remember that you also need to photocopy the questionnaire. If you plan to survey 300 households in 10 villages, you have to pay for around 10-15,000 photocopies in total. In some places this can be quite expensive. You should also budget with assistance for entering data; ideally, your research assistant can assist in this between surveys.

## 4. Field work

Activities during the field work include the interviews where information from randomly sampled respondent households is elicited as well as standardisation of local units of measurement, collection of price information from market surveys and data checking.

### 4.1 The survey interviews

The actual interview situation, where the respondent and enumerator meet to fill in the questionnaire, is crucial to getting good data. In this situation the respondent and enumerator must gain a common and hopefully correct understanding of the real world experiences that the respondent communicates. In addition, the enumerator must correctly interpret this information and transfer it into the pre-designed format of the questionnaire. This happens in a brief meeting between two or more people that often are complete strangers sharing nothing but a common language, implying that the different pre-understandings of the world as well as natural barriers of mistrust must be overcome within a very short time. To make things even more difficult, the questions that the enumerator asks will often be concerned with highly sensitive issues such as wealth, diseases, and illegal incomes.

In addition to being crucial to the data produced, the interview situation is perhaps the part of a household income survey that has the least potential for pre-standardisation of processes and actions. It is difficult for the researcher to provide pre-survey training for the team of enumerators in knowing lies from truth, and impossible to train them in knowing why the respondent lies and how to overcome the problem. Given the framework conditions of most research projects, you simply cannot train enumerators in becoming good at deciphering people! But what you can do is to try and facilitate as good »working conditions« for the enumerators as possible. Accordingly, this section will address the where, when, who and how of the interview situation and, based on our common pool of experiences, seek to provide some guidance on how best in practice to navigate you and your enumerators through the muddy waters of this particular part of socio-economic data collection.

You should strive to establish good working conditions for the enumerators; this will make it easier for them to create feelings of trust, comfort, convenience, interest and attention during interviews. This is of course critical to increase data validity and reliability.

#### 4.1.1 Trust

Whether a relationship of trust is built depends significantly on the way we approach respondents. It is important to explain the purpose of the research properly, and to let people ask any questions they might have in rela-

### Box 12. The first quarter is the more difficult

Researchers should be aware that the questions posed in a socio-economic survey may be strange to the household – it is not something that people normally think about in everyday life. The reliability of the data provided by the households (and hopefully also validity) will increase during the consecutive survey rounds because households begin to understand the concept of the questions: after an interview respondents may start to evaluate their answers to questions that were of interest to them. Next time you come they will be more prepared and, possibly and hopefully, less doubtful about your intentions. The authors have experienced several respondents' claim that they never measure their income as rigid as asked to do in the survey – but for now on they will keep a book record of what they have collected. This is of course a joke from their side, but it proves the point that you plant a small seed when doing the first round.

Hence, the data for the first round is likely to be of lower quality. There is also the aspect of the enumerator – we start off teaching them that they have to record everything very precisely – and we use a lot of time in training them to use the right measurement techniques. BUT the work will sooner or later become trivial for the enumerators and they will find their own rhythm and working style, e.g. some may put less effort in estimating quantities (we would not call it systematic error). In one of our studies, the first round ended up as a trial and error round and a fifth round became necessary. Hence, it is important that researchers spend extra energy during the first round – it is an investment which will pay off during later rounds and is needed as it is difficult to detect and costly to correct mistakes in later rounds.

tion to our presence. This should be included in the enumerators' training. The researcher should visit all households at least during the first round of interviews to personally make introductions and answer questions. This facilitates a general atmosphere of respondents being persons rather than mere research objects. In the following survey rounds it is good to remember the names of the household heads and possibly the other household members and start by asking about how things have been since the last visit.

Trust is best facilitated in a relaxed atmosphere that is well known to the respondent, implying that the respondent's homestead could be a well suited



place to conduct the interview. Choosing this place may, in addition, yield extra benefits in the form of useful information about the respondent, the household, and the respondent's relation to the enumerator. If the respondent seeks to avoid doing the interview at the homestead it could be an indication that something is sought hidden from the enumerator (or in some cases with external enumerators, poor households are not comfortable to invite strangers as they feel their poverty is exposed). Sitting in the homestead might yield information that can be used to check the respondent's answers – such as the telling evidence of a hunting trap lying around in the courtyard or the expensive newly bought furniture in the living room. Using such observations should of course be done in a polite and humorous way to maintain the relationship of trust.

#### **4.1.2 Who is interviewed**

Who is actually being interviewed can have important implications for the validity of the data. In most households the work chores are divided among household members, implying that no one in the household will know the entire household economy. Often men are responsible for cash crop farming and other cash earning activities, while women and children take care of subsistence farming and the day-to-day running of the household. In addition, many children are engaged in minor income earning activities or are responsible for herding livestock. The optimal interview should therefore elicit information from all members of the household. This is, however, not always practically possible, but it is recommended to ask the households that all adults be present at least for part of the interview. One way to do it is to ask all the »female spouse« questions first, and thereafter continue with the husband.

In some cases it is an advantage if the two spouses are interviewed together. Then they can correct each other, which might yield more correct information. There are, however, situations where this is far from optimal, such as when one of the spouses wishes to hide certain activities from the other. A good enumerator can plan for this after one or two survey rounds, but it will not always be possible to conduct the interview under optimal conditions.

#### **4.1.3 Timing**

Another practicality which can influence the quality of information obtained is the timing of the interview. Doing interviews late in the day in the agricultural season when people are working very hard is a bad idea. The interviews should be scheduled according to the respondents' preferences to allow for the greatest possible convenience and attention, and time could be arranged for interviews to take place during a break in the agricultural field or in the morning. It is useful to agree on the time of the interview one day in advance to make sure that respondents are at home and ready to provide the information.

#### **4.1.4 Enumerator bias**

Most researchers with some field experience know that there can be huge variation in the questions asked and approaches used by enumerators filling



in a standard questionnaire. Some of this variation may be used purposively by the enumerator to assure that variation in respondents' motivation, trust, etc., is overcome, or to ensure that the time of the respondent is not wasted by asking questions where the answer is given in advance, e.g. asking an 80 year old woman living alone whether she has produced any timber during the past one month. This variation is allowable and may reflect that the enumerator has important interpersonal skills. Other variation, however, is caused by lack of enumerator instruction or motivation and can be harmful to the data quality. A common problem in the interview situation is the enumerator using directive probes, such as »Did you get any income from charcoal burning in the past three months?«, rather than »What have you done to earn income in the past three months?« The problem about such directive questions is that you risk losing details and important data as the respondent just fills in the blanks created by the enumerator by stating »yes« or »no«. Hence, a general rule of thumb is that the enumerator at all times should ask open questions – at least for a start. If the respondent does not seem to recollect very well what has happened in the past three months, the enumerator can provide some assistance asking »Did you do any charcoal burning? fuelwood collection? fishing? etc.« If you want to be absolutely sure that all interviews are conducted in exactly the same way you will need to prepare a list of allowed probes for all (or selected) questions and tell the enumerators to use the probes in the order you have listed them.

Often it is difficult for respondents to remember all their incomes in the recall period. One way to aid respondents is to ask them what major costs they have incurred during the recollection period, e.g. for medicine, clothes, agricultural inputs or schooling, and then ask them; »From where did you get the money to pay for this?« It is important that enumerators know the seasonal calendar for livelihood strategies and natural resource uses in the area to enable evaluation of the validity of answers, and that the same enumerator visits the household during all survey rounds (see sections 3.6.2 and 4.1.1).

#### 4.1.5 Researcher bias

Your individual focus as a researcher can be a liability to data quality. If you put special emphasis on one resource or activity in the total household account you risk distorting the overall picture. Thus, if you are particularly interested in the contribution of edible plants to total household incomes you must be careful in your research design and implementation not to create a bias because you tend to put more emphasis on ensuring that your enumerators capture these. If you are not careful the risk is that the relative income share of such plants is inflated. Box 13 provides a small test of the potential significance of having a stronger focus on certain income sources. If you are particularly interested in a specific product, such as rattan, or issue, such as how households respond to shocks, an alternative is to prepare a one-off add-on questionnaire that can be administered during the second or third quarterly surveys (that are the least time consuming for the households to answer).

#### Box 13. Your focus can induce biases in the data

Alongside the Tanzanian survey a minor study on the use and importance of medicinal plants in primary health care was implemented (Errboe 2007). The study encompassed in-depth interviews of 21 of the PEN households on sicknesses and use of various treatments one or two days after the PEN enumerators had interviewed the household and using the same recollection periods. The result of the two approaches to quantify the use of medicinal plants was, as would be expected, that the smaller survey with an exclusive focus on sicknesses and use of medicinal plants found a higher use of such plants than what was revealed by the PEN survey. Whereas the PEN survey found that five households had used medicinal plants within three months prior to the survey, the medicinal plant survey found that seven households had done so. With regard to species used, the difference was larger. Whereas the PEN survey found eight instances where a plant species had been used for a treatment, the medicinal plant survey found 19 such treatment-species instances. Behind this result were both a higher number of species per treatment and a higher number of treatments in the medicinal plant survey. Part of this difference might be attributable to a difference in the persons actually interviewed, as more female adult household members were interviewed in the medicinal plant survey, but there is little doubt that part of the difference is attributable to the more thorough probing into an issue of special interest. The result tells us that a socio-economic survey covering all income sources will not result in 100 % coverage of income, which implies that we should seek a homogenous level of inquiry into all income sources in order to avoid inflating the share of income from certain sources.

#### 4.1.6 Sensitive issues

Eliciting income from sources that respondents find problematic to reveal is perhaps the most challenging task of socio-economic surveys. Often such sensitive information is highly important to the quality of the data set. In many rural areas of developing countries, people earn a high proportion of their income from nominally illegal sources. Illegality of activities can inhibit information gathering in many areas, as one of us found when asking children about their hunting of small birds and rodents in Tanzania – not exactly an area that most would identify as problematic! In many areas, forest income in particular is highly sensitive due to its illegal nature. Shackleton et al. (2001: 134-135), for example, mention that the low proportion of households in their sample trapping or hunting wild animals is »pro-



bably the result of concern about the confidentiality of the results.« Other important income sources can only be quantified with great difficulty due to their socially sensitive nature. In some areas this goes for remittances. Asking older people to reveal just how dependent they are on the assistance of family and neighbours can be very difficult. One approach to overcome this is to quantify consumption and earned income, the difference being remittances. In other instances, the sheer size of cash remittances may make people vary about revealing it.

Important income may be underestimated due to religious reasons. Many churches denounce the use of traditional medicine, e.g. medicinal plants. Hence, people practising within some parishes are reluctant to reveal the use of such medicines. This problem in socio-economic surveys has been acknowledged by a number of scholars (Shackleton et al. 2001). Also, recording the use of traditional medicine to cure culturally sensitive ailments, such as sexually transmitted diseases, has proved challenging. Our experience is that it pays to be persistent and patient, approaching the issue in more survey rounds in the hope that trust increases over time with the repeated interactions between enumerator and respondents.

There are some techniques which, in a number of contexts, have proven themselves valuable in getting respondents to reveal sensitive information in the actual interview situation. One is to show the respondent that you know and accept the local conditions concerning sensitive issues, e.g. letting the respondent know that you are fully aware that it is the »normal« practice in the community to collect fuelwood in the protected forest reserve where collection of fuelwood is prohibited. It is also important that enumerators have the necessary background knowledge to be able to immediately tell if a respondent seeks to grossly underestimate any »illegal« activities. In the Tanzanian survey, enumerators often experienced that respondents first explained to have produced »only two small bags of charcoal«. Normally, however, charcoal is produced in kilns that yield much higher quantities and by revealing this knowledge – often with a knowing smile – the enumerators often made the respondents laugh and reveal the true amounts. Hence, local knowledge and a good sense of humour can bring you far in socio-economic research!

## 4.2 Extra-survey activities

Apart from the actual interviews a number of activities are necessary to ensure that the data collected are useful and valid. This section describes approaches to converting local to standard units, getting prices right and the crucial aspect of data checking.

### 4.2.1 Unit standardisation

In some of the research projects on which this paper is based, estimating the true sustainability of household-level income is important. To achieve this, and to enable comparison between quantities reported in different surveys, local volume units must be converted to International Systems of



Units (SI units) – though this information is not strictly required to just estimate household income using the PEN approach. Converting local units to SI units is time consuming and requires action during or immediately following a survey round. Some products are only available seasonally, and leaving standardisation of units encountered in one survey round to the following round means that some products will not be available until the following year. Examples are flowers, fruits, vegetables, mushrooms, and herbal medicines. Additionally, local restrictions on harvest may apply. In some areas the forest is opened up for fuelwood collection only once a year, and measurements of the relevant units are likely to be least time consuming at the time of collection.

Standardisation of some units is straightforward, e.g. local units of rice, maize and other homogeneous products that can be weighed in abundant quantities at the market or by using farmers' stored supplies. Also, some locally used units, e.g. buckets, cups, bags, and plates, have a standard volume and are therefore easily converted into SI units (Cavendish 2002). More challenging products are, e.g., loads of fuelwood and fodder or bundles of forest foods. These are rarely standardised; amounts of fuelwood and fodder typically depend on the sex and age of the collector, while forest foods for subsistence use may depend on the size of the household. The large variation means that more units need to be measured to achieve a satisfactory degree of precision, and that it may be relevant to break, e.g., fodder loads into adult and child loads. These standards can then be applied to the data reported by a household depending on who is reported to be the primary collector of a product.

An issue which can lead to some frustration in the unit standardisation is when local resource use practices break the standardised units. An example could be a person carrying both fuelwood and roofing material in a head load, implying that the head load unit is split on more products. In such si-



tuations it is important to judge on the significance of such inaccuracies in relation to the overall research objectives – will such inaccuracies introduce a significant bias in the results or not?

In practical terms, it is necessary to dedicate time after a survey round to unit standardisation (unless sufficient additional labour is available during the survey), and the list of all products mentioned in the survey must be continuously updated. Trips to the case area exclusively for unit standardisation purposes may be necessary.

The reliability of the standardisation needs to be consistent – a certain level of variance must be aimed for. In Nepal, for example, max. 10 % variance on standardised units was the aim and measurements, with a few exceptions, continued until this aim was reached. The validity of measurements can be enhanced by ensuring that all relevant sub-groups of a local unit are identified. This can be adult vs. children loads, and it can be the existence of different locally used standards for a product.

#### **4.2.2 Getting prices**

As far as possible, the price of all goods, whether traded or not, should be elicited from the individual respondent. For goods that have been sold or bartered by the respondent this normally does not pose problems. For goods that are marketed locally a price estimate can be elicited from the respondent, but this should be checked with knowledge obtained from local price surveys. Some products may be marketed in neighbouring communities and such prices can give an indication of the price level. This approach was used to value fruits and other small forest products in the Bolivian study. For goods that cannot be valued using these approaches a number of alternative valuation methods exist (Gregersen et al. 1995). Here we discuss challenges related to these alternative methods and to their application by enumerators.



Valuation using the price of marketed substitutes should only be done after careful consideration of the degree to which the product is a close enough substitute to allow for comparison. For example, allopathic medicine purchased at a dispensary may not be a good substitute for traditional medicine due to differences in both efficacy and illness targeted. A substitute may involve travelling costs which would need to be added to the price of the substitute. In the Nepal study, the value of fern shoots was estimated by use of market value of leafy vegetables.

An alternative approach is valuation through labour costs, used in the Nepal study to value products, such as dry pine needle litter and fuelwood, collected on discrete harvesting trips, i.e. trips with the sole purpose of collecting a particular product. Here the time spent on collection is valued by a relevant, possibly seasonal and gender specific, wage labour rate. Challenges with this approach are to assign the time allocated to collection of a specific product when more than one product is collected, and to determine the valid wage rate reflecting the opportunity costs of the collector at the given time.

As a last option to price a non-marketed product the willingness-to-pay (WTP) method has been used. This method runs the risk of eliciting the respondent household's value-in-use rather than the value-in-exchange, and may therefore provide the value to the specific respondent household rather than the price. The value-in-use may be both higher and lower than the market price depending on the household's preferences, and problems of validity (getting the actual market price) and reliability (different households may have very different preferences and values elicited from one household may not be applicable to other households) may occur. An example of this problem was reported from the Bolivian study where respondents' valuation of some medicinal plants varied with knowledge of the uses of the particular plant species. WTP is, however, sometimes the only option.

### 4.3 Checking information

The information recorded in the questionnaires may, for varying reasons, not reflect reality. Examples are that the value of a gift may be difficult to estimate for the respondent, people may forget or knowingly provide wrong information, or the enumerators may for some reason not record the stated information correctly. Hence, it is extremely important that the researcher spends time and effort in checking and verifying the recorded information.

#### 4.3.1 Checking during survey rounds

As mentioned earlier, the team of enumerators will often be somewhat unclear about the details of the questionnaire in the first survey round, and confusion can be widespread. To avoid this leading to deteriorating data quality much care should be taken to check recorded information during survey rounds – in particular in the first quarterly survey round. Assuming that enumerators have been trained and understand the questionnaire, checking questionnaires in the field can focus on plausibility, thoroughness, and falsification. Remember that a larger sample size implies more time needed for quality control.

Follow-up with enumerators needs to be done daily during the survey rounds. We found it useful to systematise the field checking of filled-in questionnaires during daily meetings with the enumerators where problems in the previous day's questionnaires were discussed. Organising this as group meetings with an open atmosphere encourages a team spirit among enumerators and creates peer pressure to conduct quality work. It pays to systematise your quality assurance. Predefine criteria for quality assuring your data – e.g. does consumption correspond with household size, is any income recorded, does expenditure correspond with income, are there variations between the questionnaires or do they look alike. A common challenge has been to assure that enumerators and respondents adhere to the recollection periods specified in the questionnaire. In many instances this tends to slip if the enumerators are not very careful about probing whether the reported incomes actually occurred within the past 30 days or 90 days – vigilant and recurrent checks are necessary here.

Plausibility of information includes verifying that blank cells are indeed blank, especially for seasonally frequent products. A way to do this is to demand that your enumerators cross empty cells to indicate that the question has been asked and that no information was recorded. It also involves, given information about assets and previous rounds, evaluating the overall pattern. For example, a livestock owner is likely to have income from livestock, and a shop owner to have an overall profit from the shop. Furthermore, quantities of products sold and collected should be realistic given the season, the household size and data from previous quarterly surveys (see also Box 9).

Thoroughness is related to checking for blank cells and double-counting. For example, a product may be noted under »direct forest incomes« as well as »forest derived incomes«. Most of all, it is important to assure that the questionnaire is complete – lack of information during analysis is a situation you surely want to avoid.

Falsification may be tempting for enumerators to save time, and can be revealed or discouraged by announcing at the time of training that re-interview of random questions with a random sample of respondent households will be conducted in every quarterly survey by the researcher, and that falsification will mean expulsion and no salary payment. The re-interview then of course has to be conducted. A word of caution: when re-interviewing you must find the person interviewed – otherwise you cannot confirm that the recorded information corresponds with the answers given. Another good indirect way to control your enumerators is by going through the individual questionnaires (with the enumerator) for inconsistencies or irregularities, which they have to explain. Another way is to compare questionnaires across enumerators – you will quickly get a good feeling of who is doing a good job and who is not doing well. Falsification will also likely lead to implausible data and may therefore reveal itself. In addition, a good indicator of possible falsification is low variation in data (questionnaires look alike for the same enumerator). Spotting falsification is of course important as it has serious implications for the validity of the data. If an enumerator is found to falsify data, all the information collected by him/her has to be deleted from the data set.

To verify the validity of responses, information can be sought from traders about product prices, and from neighbours and other villagers regarding, e.g., shop/livestock/agricultural earnings. For price information, in cases where respondents' stated price differs markedly from the price provided by traders and neighbours, an average based on the latter can be used unless it can be documented that, for example, respondents had to pay a higher price renting oxen due to extremely high demand in the ploughing season. For information other than prices it is difficult to elicit information against the will of the respondent. If a respondent repeatedly refuses to participate truthfully in the survey, she or he will have to be left out in future rounds.



In most cases, however, forgetfulness or lack of knowledge about the intentions of the researchers leading to fear and distrust are the likely reasons for providing faulty information, and a friendly discussion of the plausibility of, e.g., repeatedly incurring expenses higher than the income is likely to yield useful information.

### **4.3.2 Checking between survey rounds**

Ideally, after each quarterly survey the data should be entered immediately into a database and checked again for plausibility and missing information so that follow-up can be done in the next quarterly survey. In the Mozambiquean study, a systematic check of key variables was done before the fourth quarterly survey, leading to substantial efforts in the field during the last quarterly round to check up on problems, in particular from the first round. In the Bolivian study, visual checks of key variables were made following each quarterly survey by comparing with the results from the previous quarters. This yielded several instances of inconsistencies, e.g. in the number of livestock and other animals. In the Tanzanian study, the between survey checking was formalised by keying in a few variables in spreadsheets and checking for consistency between rounds. In addition, an account of animals and agricultural produce was made before the last quarterly survey, which implied that the sale, loss and consumption of these items in many instances was corrected. Our conclusion is that doing systematic checks of information between survey rounds is highly recommended as it allows you to bring summaries for verification and triangulation purposes in the following survey round. The field work period is invariably busy, but data entry has to be done at some point and doing it sooner means you have the possibility to produce more valid data.

Ideally, before the end of field work, you should systematically check if households' own-reported estimates result in aggregate unit values with satisfactory properties. If you have continuously entered data into a database, this is easily done: you extract product-level unit values and analyse their basic distributional statistics (mean, s.d., min, max, mode, median). For unit values with unacceptable properties, you can then proceed to collect additional price information. For products where it is not possible to collect own-reported values, such as for browse and graze in the Nepal study, this is also a good time to think through how valuation can be done and whether additional data collection is required. Explicitly addressing these issues while still in the field will make your life much easier during the subsequent data analyses.

## **4.4 Giving gifts**

Establishing and maintaining a good relationship with communities and respondent households may entail giving gifts to show gratitude and to compensate households for their time spent participating in your research. One can, however, argue that giving gifts also implies the introduction of a different exchange relationship between the researcher and respondent, and that it should only be done after careful evaluation of the pros and cons.

#### Box 14. Gift giving i Tanzania

In the Tanzanian survey, a contribution to a construction project was given in every village (school, dispensary), two soccer balls for every round (one for the men and women's teams respectively) and 1 kg of rice for every household in every visit. The experiences with these gifts were very good. Also non-respondents recognised that we at least contributed a bit to the village and not only used its hospitality for free. Respondents were generally happy, although not thrilled by receiving the present and it was obvious that we did not create envy in the villages. Still, we avoided the comments: »why have you come back without bringing us anything?«, which was experienced in that area earlier on.

PEN technical guidelines (2007:49) suggests giving a small gift to interviewed people, saying that gifts will »boost moral... and help avoiding respondents fatigue and withdrawal from the survey.... It should be of practical use and not be overdone but reflect the time spent on the interview. For example, a kg of sugar and a bar of soap can be an appropriate present...«



The gift theory (Mauss 2002) argues that giving gifts implies an establishment of relationships, e.g. power relationships and expectation of reciprocity. The gift is not neutral; it has implications for those who receive and give it. The gift normally creates reciprocity, and defines a type of dependency. By giving a gift, the interviewer seeks to provide an incentive for the respondent to answer the questions (reciprocity). This facilitates access to information, but it may also imply problems for present and future research. More importantly, it may have implications for the self-esteem and behaviour of the researched people.

The decision to give gifts or not has to be carefully taken. Be also careful about the possibilities of opportunistic behaviour from local/traditional leaders, e.g. by purposefully stating traditions and ceremonies to negotiate some benefits that are not for the community.

#### Box 15. Giving computers to communities in Nepal

In the Nepal survey, we gave gifts to the forest user groups with which the research agreement had been made, but nothing to the individual respondent households. This was decided jointly by the researchers and the user groups. The institutions, that represent all the forest users, were asked to discuss their needs and we then received a formal letter indicating that they would be happy to receive computers and printers for the forest user group or the local school, and in one case a contribution towards building a forest user group office. We also provided information like a large map of one of the study areas and an updated list of households in another area. The rationale for giving an expensive gift was not merely to express our appreciation for the help and support in data collection, but also to express lasting commitment of partnership in research and to support local capacity building. We are planning to return to the study areas and conduct the PEN survey again in 2009 and therefore we were very careful to build good and lasting relationships.

## 4.5 Household attrition

Household attrition can render your remaining sample too small for generalisations (remember to factor in up to 10 % drop-outs when deciding on sample size) and attrition means that expenses incurred for collecting data prior to attrition is in many cases wasted. Attrition may be caused by migration from the case area, or by unwillingness to continue. Unwillingness may be related to the survey (the PEN surveys are very extensive, they collect information on almost all aspects of the respondents' lives, and responding to the questionnaires is time consuming), to the enumerators, to the researchers, or to the research being seen as connected with an opposing fraction of local politics (of various types).

To minimise attrition related to unwillingness it is important to inform potential respondents about the purpose, the nature as well as the time required to participate in the survey, to maintain transparency when dealing with respondents and others from the village, to include a component regarding behaviour in the enumerator training, and to not become involved in local politics. The latter may be difficult as some kind of accept by local authorities/elites will almost always be necessary for conducting the survey.

We experienced relatively low attrition rates of 3-4 % in Nepal, and almost all were due to migration and other factors not related to the survey itself. In the Nepal surveys, we used local enumerators who were supervised by a team of 4-5 researchers. In the Tanzanian survey, an attrition rate of 7 % was experienced, and here drop-outs were mainly due to unwillingness. According to our perception, the main underlying reasons for the unwillingness were social problems, in particular severe poverty and alcoholism, and a lack of trust towards the true objectives of the research. Prior to attrition all the eight households were visited by the responsible researcher several times to clear up issues of lack of willingness to disclose income and general poor data quality caused by lack of trust. It was, however, impossible to inform and persuade the households into cooperation, whereas the same efforts extended towards a number of other households resulted in cooperation and trust.

In a less fortunate experience, the Guatemalan study yielded higher attrition rates: 15 and 19 % in two townships, whereas a third yielded 42 %. There are several reasons for this outcome. The study area was too large given the resources available, making field supervision cumbersome and therefore less intensive than optimal. In addition, local politics led to the imprisonment of the most prominent leaders in one of the villages, triggering a rapid increase in the households dropping out from our survey. Finally, not enough trust was built arguably as a consequence of stationing bachelor students alien to the areas, which meant that they didn't speak the local language and in some cases even had to overcome themselves a number of prejudices mirroring a historic cultural clash amongst indigenous and non-indigenous groups in the area.

## 5. Post-field work

An important aspect of doing empirical research involving people is to give back the results of the research. Most people doing research in developing countries have been confronted with the disappointment of people having participated in earlier research without ever receiving any information about the outcomes. This is unethical. It also raises obstacles to future research that will have to overcome people's feelings of disappointment, fatigue and mistrust.

A research project can contribute to new knowledge and better opportunities for discussion and analysis at the community level. What a given research project can contribute will depend on the communities' needs and the specific purposes of the research, but at least a report of the research findings should be submitted.

Specific output from a total household accounting study presented to the respondent households could be a one-year summary of all the information provided by the household in the quarterly surveys, nicely presented. At the community level a total summary could be provided; it could, e.g., support future forest management to know the level of forest product harvest and the product mix demanded by the forest users. Of course individual summaries should only be presented to the concerned households, as it contains confidential information.

Other results to present could be copies of maps produced, a presentation of posters displaying the results, or details on demographics. The important message is that as a researcher you are morally committed to return information to the respondents in a way that is (most) useful to them. Showing clearly that you are aware of this responsibility is likely to create better relations with the community.

### Box 16. Communal notebooks in Bolivia

The survey in Bolivia set high standards for feed-back to the involved communities. The importance of data and information for decision-making was discussed at community meetings, including the desire of the local people to be able to analyse their own situation. To what degree do our forest products support our livelihoods? How? It was decided that the research team should return »organised and systematised information« resulting from the data collection in each community.

Formal agreement was made to submit documents called »Communal Notebooks« (*Carpetas Comunales*); these should contain the essentials from fieldwork. The »Communal Notebooks« compile and systematise the main characteristics of each village (history, main conflicts, boundaries, forest resources use, etc.), presents data of households characteristics (demography, education, etc.), and presents economic information at household level. They can be used as a negotiation tool in future involvement in development and research projects. The notebooks also allow local people to systematically discuss and reflect on the research findings, thus empowering them and forming a basis for deciding on action.

## 6. Concluding remarks

We have presented here some »good practice« advice for achieving valid and reliable data from structured questionnaire surveys. A summary of the guidelines resulting from our experiences is provided in Appendix A. Research implementation naturally requires more than merely following guidelines as you cannot foresee the challenges and opportunities you will face in your specific study. However, by using the guidelines you will at least be prepared for some common challenges and can plan how to make the most of your time in the field.

The most important determinants of reliability are training enumerators to facilitate their understanding and standardised administration of the questionnaire, conducting survey rounds soon after major harvesting periods to enable recall, assuring that all relevant local units are converted to SI units, and that price estimates reflect local prices and valuations.

Your behaviour will influence the validity of the data, right from you start to build trust during your very first visit to the study area. You should thus come well prepared. The enumerators and their training are also crucial to maximise validity. Using local enumerators who are familiar with the research site, arranging for the same enumerator to visit the same households in every round and ensuring that they know and understand the importance of the local seasonal calendar are all of major importance for validity. Also of importance are triangulation through bringing data from previous rounds to survey interviews, and including as many household members as possible in interviews to get the full picture of household activities. In relation to extra-survey activities, it is important for the validity to check the data during and between survey rounds for plausibility, thoroughness and falsification.

Finally, our guidelines are based on implementation of total household account studies in Africa, Asia and Latin America, but most issues are also likely to be relevant for other types of studies. For example, site selection, working with enumerators and assistants, giving gifts and post-field work responsibilities are common to most research, whereas obtaining price information and local unit standardisation are examples that are more narrowly applicable.

# References

*Campbell, B.M., Jeffrey, S., Kozanayi, W., Luckert, M., Mutamba, M. and Zindi, C. 2002.*

Household livelihoods in the semi-arid regions: Options and constraints. Bogor: Center for International Forestry Research.

*Cavendish, W. 2000.*

Empirical regularities in the poverty-environment relationship of African rural households: Evidence from Zimbabwe. *World Development* 28: 1979-2003.

*Cavendish, W. 2002.*

Quantitative methods for estimating the economic value of resource use to rural households. pp. 17-66. In: Campbell, B. M. and M. K. Luckert (eds.). 2002. *Uncovering the hidden harvest – valuation methods for woodland & forest products*. London: Earthscan Publications Ltd.

*Errboe, G. B. 2005.*

The importance of medicinal plants for rural communities in Iringa District Tanzania. Unpublished BSc-thesis. Copenhagen: The Royal Veterinary and Agricultural University.

*Gorman, G., Clayton, E., P., Rice-Lively, M. L. and Gorman, L. 1997.*

Qualitative research for the information professional – a practical handbook. London: Library Association Publishing.

*Gregersen, H.M., Arnold, J.E.M., Lundgren, A.L. and Contreras-Hermosilla, A. 1995.*

Valuing forests: context, issues and guidelines. FAO Forestry Paper 127. Rome: Food and Agricultural Organisation.

*Mauss, M. 2002.*

The gift: The form and reason for exchange in archaic societies. London: Routledge Classics.

*PEN codes 2008.*

PEN code list version 6.4. Poverty and Environment Network. Bogor. <http://www.cifor.cgiar.org/pen>. Accessed 1 July 2008.

*PEN prototype questionnaire 2007.*

PEN prototype questionnaire version 4 (English). Poverty and Environment Network. Bogor. <http://www.cifor.cgiar.org/pen>. Accessed 1 July 2008.

*PEN technical guidelines 2007.*

PEN technical guidelines version 4. Poverty and Environment Network. Bogor. <http://www.cifor.cgiar.org/pen>. Accessed 1 July 2008.

*Shackleton, S. E., Shackleton, C. M., Netshiluvhi, T. R., Geach, B. S., Balance, A. and Fairbanks, D. H. K. 2001.*

Use patterns and value of savanna resources in three rural villages in South Africa. *Economic Botany* 56: 130-146.

*Sunderlin, W. D., Angelsen, A., Belcher, B., Burgers, P., Nasi, R., Santoso, L. and Wunder, S. 2005.*

Livelihoods, forests, and conservation in developing countries: an overview. *World Development* 33: 1383-1402.

*Vedeld, P., Angelsen, A., Sjaastad, E. and Berg, G.K. 2004.*

Counting on the environment: forest income and the rural poor. *Environmental Economics Series 98*. Washington D. C.: The World Bank.

# Appendix A.

## Summary of guidelines

### Guidelines for implementing total household account surveys in developing countries

#### 3.1 Selecting the research site

- Consider if a proposed research site suits your purposes with regard to being representative and providing a sufficient level of variation
- Investigate what heritage previous development/conservation/research projects have left in a proposed research site
- Choose a remote site only if your budget will allow for the logistical costs, and arrange for communication lines. If you chose a remote site, be even better at planning and foreseeing challenges

#### 3.2 Approaching the research site

- Identify key authorities and individuals and present your research work and short and long-term benefits to them
- Get a formal permission from the appropriate local authorities
- Present your research to the community and make sure it is clear that you have approval from local authorities to implement it
- Take an interest in the local community, build informal relations, and respect local customs
- Respect the local community by being well prepared and by not wasting people's time in unnecessary meetings

#### 3.3 Setting the research team

- You will need to use enumerators to collect a sufficiently large set of observations
- Local enumerators know the local context but may need more training compared to external enumerators, who on the other hand need to invest time in getting to know the community and build trust with respondents
- When selecting enumerators it is necessary to consider formal qualifications (exam papers) as well as personal skills demonstrated during test interviews
- Even if you are fluent in the local language a local assistant can provide valuable services such as supervising enumerators, handling problems, and covering when you are sick
- Use different motivation factors consciously with members of the research team, like salary, praise, responsibility and trust. Salaries have to be locally perceived as good and at least fair
- A supervisor-enumerator ratio of 1:3-4 works well

### **3.4 Getting local context information**

- Get an overview of the local context before starting to work systematically, including:
- Prepare a seasonal calendar with members from the local community
- Prepare a participatory map showing relevant land uses and natural resources
- Start the first quarterly survey immediately after the main agricultural harvesting season

### **3.5 Sampling households**

- Sample randomly from the entire population
- If necessary for specific local study purposes, supplement randomly selected respondent households with the necessary number based on a stratified random sample
- Decide how to delimit polygamous households consistently as well as what criteria apply for inclusion of an individual in a household

### **3.6 Preparing the questionnaire**

- Decide on the need to translate the English prototype questionnaire, and if translated document the process
- Consider triangulation options in the questionnaires
- For each product consider the relevant recall period, add to the questionnaire if needed
- Use the questionnaire testing to verify the appropriateness of question wording, questionnaire format and as a final trial run for the enumerators
- Optimally, a questionnaire should be administered in less than an hour

### **4.1 The survey interviews**

- The actual interview is challenging and difficult to standardise – train the enumerators well and provide them with good working conditions
- See respondents as persons, not only research objects, and build trust
- Interview as many members as possible from the respondent household
- Interview at times convenient to the respondent household – agree on the time in advance
- Be aware of enumerator bias – train allowable probing techniques
- Be aware of researcher bias – balance the level of detail collected
- Sensitive issues can be dealt with through discretion, patience and humour

### **4.2 Extra-survey activities**

- Start unit standardisation with the first quarterly survey and conduct measurement along the way to capture seasonal products
- Set an acceptable level of precision for the unit standardisation
- Be systematic in the choice of methods for collecting own-reported non farm-gate price information: 1. barter, 2. substitutes, 3. labour, 4. willingness to pay

### **4.3 Checking information**

- During field survey, check filled-in questionnaires for plausibility, thoroughness and falsification - preferably every day to allow follow-up and correction
- Enter data as soon as possible, check again for thoroughness and plausibility
- Bring information from previous survey rounds to the next to follow up on problems and facilitate triangulation
- Check properties of aggregate unit values

### **4.4 Giving gifts**

- Giving gifts to show appreciation of respondents' contribution may be a good idea – but always consider whether gifts are of the right size and what implications they have in the local context

### **4.5 Household attrition**

- Include an extra 10% in your sample so that attrition will not jeopardize your ability to generalise from the data
- To avoid attrition inform extensively about research purpose, activities and time requirements before starting the survey; and plan realistically

### **5. Post-field work**

- Remember to return data to the respondents and the local community, preferably in a form useful to them, possibly as short summary report of demographics, economics, maps, etc.

## Forest & Landscape Working Papers

- No. 1 • 2004 Experiences with web-based teaching in forestry
- No. 2 • 2004 Distribution of tree seed and seedlings
- No. 3 • 2004 Identifying forest-livelihood research priorities in Mozambique
- No. 4 • 2004 Breeding for die-back resistant *Dalbergia sissoo* in Nepal
- No. 5 • 2005 Farmers' planting practices in Burkina Faso
- No. 6 • 2005 Cocoa agroforests in West Africa
- No. 7 • 2005 Observations on timing and abundance of flowering and fruiting of woody plants
- No. 8 • 2005 Tree seed in Malawi
- No. 9 • 2005 Commercial distribution of tree seed in small bags
- No. 10 • 2005 Using soft systems methodology to develop a mango forest management and planning decision support system in a buffer zone
- No. 11 • 2005 Integration of Urban Woodland Policies
- No. 12 • 2005 Substitutes or Complements?
- No. 13 • 2005 Landscape values of rural inhabitants in the Sound region
- No. 14 • 2006 not yet published
- No. 15 • 2006 Timing and abundance of flowering and fruiting of woody plants in the Hørsholm Arboretum
- No. 16 • 2006 Medicinal plant markets and trade in Maputo, Mozambique
- No. 17 • 2006 Carbon-Nitrogen Interactions in Forest Ecosystems
- No. 18 • 2006 A review of forest economics research in Bolivia
- No. 19 • 2007 Proceedings of a workshop on agroforestry tree seeds for farmers
- No. 20 • 2007 Case studies of nurseries in Malawi
- No. 21 • 2007 Protocol for establishment of trials with Baobab and Tamarind within the SAFRUIT project
- No. 22 • 2007 Evaluation of an international series of *Pinus kesija* provenance trials for adaptive, growth and wood quality traits
- No. 23 • 2007 Larch wood – a literature review
- No. 24 • 2007 The potential of larch wood for exterior use – Report from a joint Nordic research project
- No. 25 • 2007 A floral and faunal biodiversity assessment of Prey Long
- No. 26 • 2008 Proceedings of the 8th International Christmas Tree Research & Extension Conference
- No. 27 • 2008 Innovation Systems and Rural Development
- No. 28 • 2008 First European workshop on biotechnology for lignocellulose biorefineries
- No. 29 • 2008 When theory meets reality – how to do forest income surveys in practice