Measuring Livelihoods and Environmental Dependence

Methods for Research and Fieldwork

Edited by
Arild Angelsen, Helle Overgaard Larsen, Jens Friis Lund, Carsten Smith-Hall and Sven Wunder

earthscan
publishing for a sustainable future
London • Washington, DC

First published in 2011 by Earthscan

Earthscan Ltd, Dunstan House, 14a St Cross Street, London EC1N 8XA, UK
Earthscan LLC, 1616 P Street, NW, Washington, DC 20036, USA
Earthscan publishes in association with the International Institute for Environment and Development

For more information on Earthscan publications, see www.earthscan.co.uk or write to earthinfo@earthscan.co.uk

ISBN: 978-1-84971-132-6 hardback
ISBN: 978-1-84971-133-3 paperback

Typeset by OKS Prepress
Cover design by Clifford Hayes

A catalogue record for this book is available from the British Library

Library of Congress Cataloging-in-Publication Data

Measuring livelihoods and environmental dependence : methods for research and fieldwork / Arild Angelsen ... [et al.].
p. cm.
Includes bibliographical references and index.
ISBN 978-1-84971-132-6 (hb) – ISBN 978-1-84971-133-3 (pb)
1. Household surveys–Developing countries–Methodology. 2. Questionnaires–Developing countries–Methodology. 3. Rural poor–Developing countries. 4. Rural development–Environmental aspects–Developing countries 5. Developing countries–Rural conditions. I. Angelsen, Arild.
HB849.49.M43 2011
001.4'33—dc22 2010047736

At Earthscan we strive to minimize our environmental impacts and carbon footprint through reducing waste, recycling and offsetting our CO_2 emissions, including those created through publication of this book. For more details of our environmental policy, see www.earthscan.co.uk.

Printed and bound in the UK by CPI Antony Rowe.
The paper used is FSC certified.

Chapter 3

Composing a Research Proposal

Arild Angelsen, Carsten Smith-Hall and Helle Overgaard Larsen

---

Science is facts; just as houses are made of stones, so is science made of facts; but a pile of stones is not a house and a collection of facts is not necessarily science.
Henri Poincare (1905, *La valeur de la science*, Flammarion, Paris)

What is a research proposal?

Research can be defined as 'a systematic investigation of a question or resolution, based on critical analysis of relevant evidence' (Walliman, 2005, p37). A research proposal is a concise presentation of the planned research, answering two key questions in particular: (a) *What* is the project going to investigate? And (b) *How* is the project going to undertake the investigation? The research proposal specifies the steps required to move from questions to answers by providing a logical, coherent and realistic plan of action.

A research proposal typically has two purposes. The *internal* purpose, which is the focus in this chapter, is to force the researchers to carefully design and plan the research project. The research plan should be sufficiently operational to provide the general structure for project implementation. Most projects involve several partners, and the research proposal creates a platform for the early planning and collaboration among them. The *external* purpose is to convince the reader that one has a good (important, relevant) research idea, that it is of high scientific quality (well-formulated, sound methods, competence of individuals involved) and that the planned project can be implemented (realistic time and resource use). External approval may be needed to obtain funding or research permits, to be enrolled in a PhD programme or to get new research partners; for an overview of external evaluation criteria see Peters (2003).

A wide range of publications focused on research processes and research designs is available (for example, Bechhofer and Paterson, 2000; Booth et al, 2008; Creswell, 2009). Many of these include advice on preparing research proposals. The process of developing a research proposal can be seen as consisting of eight steps. These are illustrated in Figure 3.1. The first step is to produce a good research idea, which is then refined into a number of objectives and research questions. Further consultation of the literature should lead to development of a conceptual framework and a set of testable hypotheses. This should, in turn, allow a specification of data needs, how these are to be collected and finally demonstrate how they are to be analysed. Box 3.1 provides the outline of a typical research proposal and Box 3.2 specifies four key indicators of the quality of a research proposal.

The initial five steps in Figure 3.1 answer the first basic question, namely *what* to investigate (and why). The next three steps focus on *how* to undertake the investigation and why the approach is appropriate. A good research proposal covers all the eight steps and has coherence among all elements. Although the steps are presented sequentially, developing a research proposal is an iterative process.

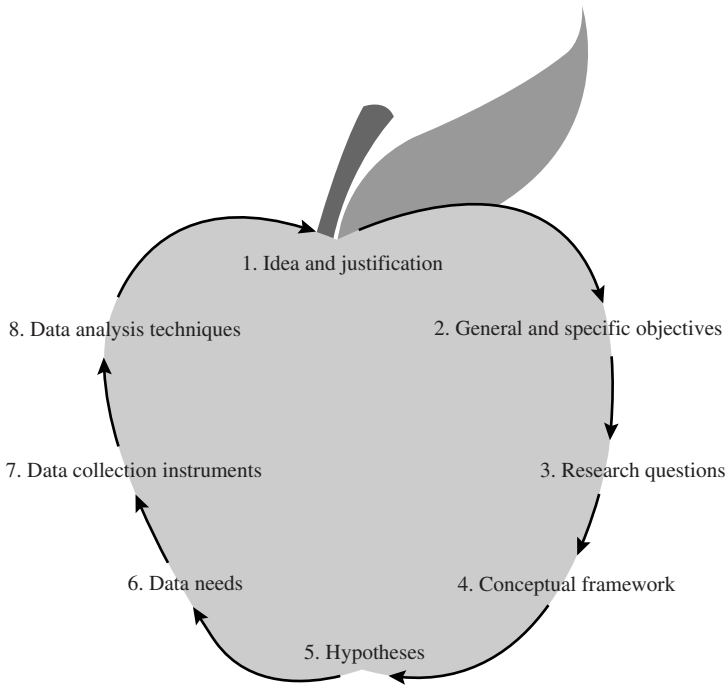

Figure 3.1 *Chewing the apple: Eight key bites in preparing a research proposal*

Box 3.1 *An outline of the research proposal*

A research proposal normally has the following headings (sections):

Title: Most researchers and graduate students use boring titles both on articles, papers and theses. Too bad, because people will then forget your work much more easily, or they may not even be attracted to read it in the first place. A good title is descriptive, of course, but one can also play with words. One possibility is to have a short catchy title followed by a more descriptive subtitle, for example, 'Ecuador goes bananas: Incremental technological change and forest loss' (Wunder, 2001). But be careful – one can go too far in 'clowning around'.

General objective: Presents the purpose of the research, including the (justified) problem leading to the need for the research. This should be brief, a maximum of ten lines. Here is one example, taken from a PEN proposal:

> The general objective of the proposed research project is to advance our understanding of the role of tropical forests in maintaining and improving rural livelihoods. Tropical forests are crucial to the livelihoods of millions of poor people worldwide. But just how important are they in preventing and reducing poverty? Which types of forests and products count most for the poor? Answers to such questions are essential to design effective forest policies and projects, and to incorporate forest issues in poverty reduction strategies. Yet we have surprisingly little empirically based knowledge to answer such questions adequately.

Background and justification: Most draft proposals have too much on this. Background is the easiest part to write, because one can learn a lot about most topics from the internet (please note, if used, remember to cite proper references). But set the scene: the geographical background, the policy debate and the state-of-the-art in the literature. And discuss why is it important to undertake this project – what is the rationale? What is the expected contribution to the policy debate, to the people in the area and/or the literature? This means that you should include a brief review of the relevant literature, with *brief* being the key word (again, most research proposals have too much of the literature review, and too little on what the project is going to do).

Conceptual framework (and theory model): This can include:

- a brief **review** of the relevant literature, major conclusions relevant for the work; and/or
- your **own framework** in terms of a box-and-arrow diagram on what the world looks like – at least the world relevant for your proposed project; and, in some cases,

- a **mathematical/analytical model** sketching the problem or outlining the hypotheses to be tested. But be careful: copying a textbook model into the proposal is rarely useful.

Specific objectives, research questions and hypotheses: Here the general objective is operationalized through formulation of specific objectives, research questions and hypotheses; the research matrix (Table 3.1) is a useful tool to ensure the logical relations among these.

Data collection: Specification of data needed to answer the research questions (the key variables), how to get them (collection), sampling (which groups, villages, and so on, to be included, how many households), and how to ensure data quality.

Data analysis: What specific methods will be used to analyse specific variables. The key word here is *specific*. Avoid a lengthy general description of methods, (almost) everybody knows what linear regression is.

Outputs: Specify what the planned scientific outputs are, such as articles, books and policy briefs.

Inputs: Present a list of all the input planned to go into the project implementation, including time (researchers, assistants), a budget covering fieldwork-related costs and institutional collaborators.

References: The literature cited (complete). Consider using reference management software.

And, by the way**: make it look nice!** No overkill, but show professionalism in the way the research proposal is written. For instance, use one font type and size consistently, consistent line spacing, numbered headings, a running title with page numbers in the headers, proper referencing in the text, and one consistent bibliographical style.

This chapter focuses on the first five steps. The next three steps are elaborated in Chapters 4–8 and 13. Developing the research proposal is part of the overall research process; note that not all components in the research process are covered by Figure 3.1, for example, data cleaning (Chapter 12) and communicating the research (Chapter 14).

A good research idea and the objectives

Each year, in universities around the world, the following scene unfolds. A student enters a professor's office, and asks the following question: 'I'm interested in topic X in country Y. Do you think I can write a thesis about it?' Topic X can be any number of things: poverty, environment, gender, food security, microcredit, forest use, aquaculture, fertilizer subsidies, trade liberalization or

development aid. The list is virtually endless. Country Y, of course, could be one of the more than 100 developing countries. The student may receive a reply something like this: 'Yes, you can! In fact you can probably write about 100 theses about it. How many theses do you want to write?' The surprised student looks like a question mark and mumbles: 'Hmm, well, just one...'

What characterizes a good research idea? It should be original, related to theoretical developments in a particular field and/or practical problems that have received inadequate attention in the past (Sjöberg, 2003). It should address a research problem – the issue that leads to the need for the research (Creswell, 2009). Further, it should be possible to empirically investigate the idea within the temporal and financial constraints of the project.

So how do we come up with good research ideas? Starting points for generating good research ideas include the literature, attending and participating in scientific discussions (from the regular Wednesday lunch presentation to international conferences) and other events (such as seminars organised by non-governmental organizations (NGOs) working in your particular field) and getting into the field (directly observing issues and talking to people).

Most research ideas are initially too broad and too vague to be good or bad. For example, the relationship between poverty and the environment in Ethiopia is an interesting issue, but too broad for most research projects. Almost any research ideas can be made into good research proposals – or bad ones – although some ideas are certainly more challenging than others. How do we move forward and get from a possibly good idea to finding out whether an idea is good or bad? A first step in operationalizing the research idea could be to formulate the research objectives – what will the research attempt to achieve? The general objective (purpose) should be a broad formulation of how the proposed study feeds into the existing literature, for example, to contribute to the emerging body of knowledge on household and community-level climate change adaptation in developing countries. The specific objectives (the scope and number depends on the type of research proposal) should explicitly formulate what the study will contribute in the area specified in the general objective. For example: (a) develop a typology of adaptive responses to climate changes, based on empirical household-level data across a range of sites, and (b) explain the distribution of response types across households and communities. Good specific objectives are logically linked to systematically address the different components of the general objective, identified, for example, through literature review (Box 3.3). They use specific verbs, such as *determine*, *develop*, *calculate*, *compare*, and avoid vague verbs, such as *understand* and *study*, to convey the intended actions unambiguously. Further, the sequencing of specific objectives often move from the simple (quantification or determination of the problem) to the more complex analytical (explanation of causes and effects);

Box 3.2 *Four generic indicators of the quality of a research proposal*

There are several ways of assessing the quality of a research proposal, but four generic indicators are commonly accepted within the social sciences.

Construct validity refers to the degree to which the operational measures in a study reflect the theoretical constructs on which they are based – a survey questionnaire should use coherent and consistent measures of the variables of interest. For example, forest income must be defined so that it can be discerned from other income sources, such as income derived from trees on agricultural land.

Internal validity refers to the approximate truth about inferences regarding explanatory or causal relationships. It is, therefore, only relevant to research that seeks to make causal or explanatory inferences, but not to purely explorative and descriptive studies. Assume, for example, that a study aspires to investigate the impact of forest accessibility on households' dependence on forest income. This requires data that enable controls for other factors affecting forest income, such as market access, in order to establish internal validity. In general, internal validity is established by ruling out rival explanations to the hypothesized causal effect.

External validity refers to the ability to generalize. It is the degree to which the conclusions based upon a research study hold under other circumstances. The possibilities of assuring external validity are affected by the sampling approach (see Chapter 4), but also by the gathering of empirical evidence on context variables that can be used to situate the individual study in a larger empirical context (see Chapter 6).

Reliability refers to the quality of measurement, in other words, the consistency or repeatability of the measurements of variables. Reliability is pursued by seeking to minimize measurement errors in the implementation of the research (see Chapter 11).

Source: Trochim (2006); Yin (2009).

they must all be possible to realize given financial, temporal and other constraints.

Initially, graduate students and researchers typically generate many research ideas and, in the end, have to pick just one. Which one to choose among several good ideas? Three commonly used selection criteria are: First, what can be learned from this research? What is the potential for new insights? Second, one should consider choosing something that is policy relevant and useful to someone. Look through journals (popular and scientific), policy and other documents to find out 'what's hot and what's not'. Third, one should choose something that one is interested in and finds fascinating. That personal

motivation is needed during the long evenings/nights that are required to complete the research project. While personal interest might be one good reason for the choice of research topic, Walliman (2005, p28) warns against making 'the choice of a problem an excuse to fill in gaps in your own knowledge'. Research should enlarge the public knowledge about a topic.

Research(able) question(s)

When the research idea and objectives are formulated and delimited, the next step is to develop one or a few research(able) question(s) in connection to each specific objective. The success of the research project depends a lot on how each research question is formulated. First, if the research questions are not well defined, this may result in the collection of data that will *not* be used and/or *not* collecting data that would be needed to answer the more specific research question eventually chosen. Second, a good research question helps limit the scope of the project. We are yet to see a research proposal that set out to do too little. Limitation can be achieved in many ways, for example, geographically (only Masindi district instead of Uganda), reducing units of analysis (only charcoal producers and not rural households) or stricter boundaries around the problem to be investigated (only one specific policy intervention, such as better policing along the roads for illegal charcoal producers). Third, a well-defined research question is an essential component in the structure of a research proposal. In particular, it helps to define the relevant literature, develop good hypotheses and define data needed.

Finding a good research question is often the most difficult part of the research planning. There is no simple recipe to follow, except: Read – discuss – think! Some proposals contain purely descriptive research questions, for example, 'what are the main income sources in the study area?' Getting an overview of the local economy may be important in the project but such descriptive questions make poor research questions. Research goes beyond simple accounting or finding correlations between variables – it also aims to understand and explain the world (for more on this, see Chapter 13). The research questions should reflect that. Desirable attributes of a good research question include:

- First, it is sharply defined in a way that can be answered in one sentence, possibly with 'yes' or 'no'. An example of a poor research question (although it can be used to formulate the general objective) is: 'Which factors influence the adoption of soil management practices?' A better one is: 'Does better access to formal credit lead to higher investments in terracing?'
- Second, it is *researchable* in the way that the proposed project can answer the

question, given particularly two constraints: (a) the time, money and skills available, and (b) the data availability and variability (enough variation in the data to test the hypotheses, see below).

- Third, a *puzzle or apparent paradox* makes a good starting point for making research questions. It might be a case with contradictory impacts, or contrary to conventional wisdom. For example, there is a research report from the highlands of Ethiopia suggesting that poor people invest *more* in soil conservation, contrary to what conventional wisdom suggests. Why? You formulate a research question based on this, and later make possible hypotheses to test (for example, the poor rely more on the land and therefore have stronger incentives, or soil conservation is labour intensive and the poor have low opportunity costs of labour).
- Fourth, it makes a *contribution* to our knowledge base. That means either that: (a) the research question is a new question or an old question reformulated and taken a step further, or (b) an old question applied to a new geographical area or a new (and better) set of data (to test the universal applicability of the answers proposed by earlier studies).
- Fifth, it is *policy relevant*, in other words, there are some policy handles and space for intervention (not necessarily by national government, but also by NGOs, local village council, firms or donors).

Conceptual framework

Having formulated objectives and research questions, the next logical step in the survey-oriented research process is to explicitly identify/develop and describe a conceptual framework. In practice, this is often done alongside the specification of objectives, research questions and hypotheses. A conceptual framework essentially defines and outlines relations between the main concepts a research project works with, based on selected, prevailing theories and associated empirical works. In other words, how the reality under study is expected to behave. A conceptual framework should provide guidance to the development of hypotheses and subsequent determination of data needs and selection of techniques for data analysis.

Conceptual frameworks come in many forms and vary across disciplines. Chapter 5 presents one that many students of poor rural economies have found useful, namely the Sustainable Livelihoods Framework (SLF, for example, Carney, 1998; Ellis, 2000). The SLF is a broad framework for analysing how household assets and higher scale factors (local institutions, markets, and so on) result in a set of livelihood strategies and associated livelihood outcomes (that have repercussions on household assets in the next period as well as on the

Box 3.3 *Characteristics of a good literature review*

Making a good literature review is challenging. Some literature reviews are like laundry lists: for example, Andersen (2002) said X, Brandon (2003) studied Y, Carlson (2004) looked at Z. These are poor reviews. A good review will structure the literature by topics and discuss it critically in a synthesis of results contributed and approaches applied by previous studies, ending with a conclusion stating what remains to be done in the field (this should then justify the relevance of the proposed study). For example, a good literature review on environmental dependence and poverty might start with a subsection on definitions and measurements of 'environmental dependence' and perhaps also 'poverty' (briefly, as there are numerous articles and books covering that). Next, it may have subsections on overall dependence, how dependence varies across household groups (rich–poor, female–male headed, and so on), and how dependence varies across different socio-economic environments (remote–central location, and so on). Finally, a section on what methodological approaches previous studies have used, their strengths and weaknesses in relation to studying environmental dependence and how your proposed research will expand the existing scholarship (for example, by including new relevant concepts, applying a different methodology or testing a hypothesized relation).

Providing a complete guide to conduct literature reviews is beyond the scope of this chapter and the reader is referred to the many available books (for example, Hartley, 2008; Creswell, 2009; Machi and McEnvoy, 2009) and online sources (for example, Obenzinger, 2005; Emerald, 2010; Melbourne, 2010).

environment). The broadness of the SLF is both its strength and weakness. It is useful as a framework for organizing information, as demonstrated well in Chapter 5, but it is less well-suited as a basis for development of explicit hypotheses – for this additional literature needs to be consulted.

The conceptual framework should not be confused with general theory development in the social sciences. A theory is by Walliman (2005, p439) defined as: 'A system of ideas based on interrelated concepts, definitions and propositions, with the purpose of explaining or predicting phenomena.' Thus, a major distinction between the conceptual framework and the theory is in terms of specificity. For example, the agricultural household models in the tradition of Singh et al (1986) can be seen as a specification of certain aspects of the SLF approach. While SLF gives a general link between markets and the choice of livelihood strategies, a simple agricultural household model might predict that higher off-farm wages will reduce the production of subsistence crops.

Depending on the purpose of the project (or the research proposal), the researcher may want to elaborate in detail the theory part in the proposal. This is, however, specific to the discipline and not discussed further.

Identifying, developing and describing a conceptual framework (and the associated objectives, questions and hypotheses) may be difficult and time-consuming. This should be done on the basis of an overview of the existing literature and identification of the research frontier in the field under study. Fortunately, good reviews are available in many fields and most research articles feature short literature reviews. A good point of departure is just to start reading and nesting (in other words, follow interesting references), for example, based on initial internet search (using bibliographic search engines or databases such as Google Scholar, ISI Web of Knowledge, Science Direct or Swetswise) and discussing ideas and draft texts with colleagues or fellow students.

Hypotheses

The next step is to develop hypotheses that should be formulated in response to each research question. A hypothesis is a reasonable scientific statement that is put forward for empirical testing. Beveridge (1950) refers to it as the principal intellectual instrument in research.

The difference between the research question and hypotheses is not always clear-cut. It depends on how they are formulated. We often recommend the following approach and balance between the three first components of the proposal: one grand research idea, 1–3 specific objectives, a few (maximum 4–5) research questions, at least one and maximum 3–4 hypotheses linked to each research question. But, there is a limit on the total number of hypotheses (not more than 6–8).

There are two principal ways of deriving the hypotheses, corresponding to two fundamentally different scientific approaches: (a) the *deductive* (or hypothetico-deductive) approach, where hypotheses are derived from theoretical models, and (b) the *inductive* approach, where hypotheses are based on empirical research findings (Creswell, 2009). In many proposals, the hypotheses will be developed using a combination of the two approaches (and theories are often being modified to accommodate new empirical results). In the research method discussed in this book, surveys and hypotheses should be based on both a consistent conceptual framework (and theories) as well as a review of the existing empirical knowledge. This will make it possible to directly relate research findings to larger scientific discussions. A common flaw, for example, in Master theses, is 'ad hoc reasoning' where results are *not* presented or discussed in a larger theoretical context.

Desirable attributes of a good hypothesis include that it leads to new knowledge and that it is testable. A hypothesis can lead to new knowledge by taking well-established facts further through combining them and thereby creating (and testing) new links between variables. Consider this example:

Fact 1: Many farmers are credit constrained.

Fact 2: Soil conservation often requires cash investments.

Hypothesis: Credit constraints discourage farmers from investing in soil conservation.

This hypothesis combines the two general facts, yet there are many reasons why this might not be true: other constraints can be more important, or farmers give soil conservation investments low priority and make other investments when credit supply increases. Trivial hypotheses that do not generate new knowledge should be avoided. For instance, the hypothesis 'household consumption increases with higher household income' is based on theory and can be tested with appropriate data, but is not very interesting as the relationship between income and consumption is already well-established.

An absolute requirement to a hypothesis is that it is testable. The formulation, in combination with data to be generated by the proposed research (next section), must ensure this. Hypotheses derived from mathematical models, with fewer variables and more precise predictions regarding relationships, are normally more specific and testable.

Consider the following hypothesis: Households' dependence on environmental income depends on household and village characteristics. This is poorly formulated because it is too general, for example, it does not specify which characteristics influence environmental dependence in what way. Thus a better hypothesis would be: Households in geographically remote areas have higher environmental dependence. This hypothesis seeks to establish the correlation between two specific and measureable variables. This might be taken a step further, by asking the 'why' question (Chapter 13) and then formulating hypotheses that test the reasons why environmental dependence is higher in remote areas (assuming that is the case). The reasons could be low prices of agricultural commodities, few off-farm work opportunities, better access to forest resources, and so on, and associated hypotheses would be of the type: Poor access to agricultural markets leads to higher environmental dependence.

All variables used in hypotheses must be measurable, in other words, they should be operationally defined. For instance, the reformulated hypothesis should be accompanied by text defining the four key terms used and describing how they can be measured: households (for example, group of people living under the same roof and pooling labour and income resources); remote areas (for example, using the proxy of travel time to nearest major market or the district capital); dependence (two typical measures are absolute income, and

relative income, in other words, share of total household income); and environmental income (see, for example, Sjaastad et al, 2005). This specification may result in the need for definition of additional terms (for example, what is meant by labour pooling), until it is unambiguously defined at the level where each variable can be measured in the field.

Data needs

Having completed the first part of the research proposal (the first five steps in Figure 3.1, related to 'what to investigate'), the next stage is to specify data needs, how data are to be collected and finally how they are to be analysed (the last three steps, related to 'how to investigate'). A useful tool to ensure consistency between the different steps in the research process is the research matrix (exemplified in Table 3.1). The research matrix is simply a set of columns of four of the eight elements in the research process outlined in Figure 3.1. It can be expanded to include data collection instruments, conceptual/theoretical underpinnings or other non-research process items, such as a column on policy relevance. A well-prepared research matrix will ensure a robust research design with strong, consistent and clear relations from research questions and hypotheses to methods for data collection and analysis. The process of preparing a research matrix often leads to modification and delimiting of research questions and hypotheses, as it becomes clear that data requirements are too large or that research questions are ambiguous.

The data needed depend entirely on the hypotheses to be tested. Here we want to highlight some of the generic and critical issues in the process: the population from which the data are being collected and the variables to be included in the data collection. The former concerns the site selection and sampling strategies discussed in Chapter 4, while the latter concerns the choice of survey types and design of survey tools discussed in Chapters 5–7.

When considering the population to study and the variables to elicit, it is critical to ensure that the necessary variation is present in the data. Consider the research question: 'how does charcoal production vary with the charcoal price?' The price response cannot be estimated by a one-shot household survey from three neighbouring villages, as the variation in charcoal prices at one point in time within a limited geographical area is likely to be small. There is simply not going to be sufficient price variation to permit testing the hypotheses derived from this question. Thus a key principle is: Design your research so as to get variation in the variables applied for testing the hypotheses, and keep the other variables constant. A (random) sample of households in three neighbouring villages will provide natural variation for studying, for example,

Table 3.1 *An example of the research matrix in relation to the specific objective 'to analyse the roles of forest resources in rural livelihood strategies'*

Research question	Hypotheses	Data needed	Methods of data analysis
1. What is the share of forest-derived income in rural households?	1.1 Poorer households' forest-derived income is higher relative to total income while richer households' forest-derived income is larger in absolute measures.	Total household income.	Forest-derived income per income quartiles.
		Forest-derived income.	Chi-square testing – comparison of conditional means.
2. Do natural forest resources provide important insurance values in coping strategies?	2.1 In situations of common and idiosyncratic income shocks, forest resources have an important insurance function.	Household-level recording of (a) type of shocks, (b) impact of shock, and (c) responses to each shock type.	The importance of forest-based and other responses across shock types and income quartiles – comparison of conditional means.
	2.2 Forest-derived income does not provide sufficient means to smooth consumption relative to the risk/ shock faced by households.	Total household income.	Table analysis of forest-derived income and consumption per income quartiles.
		Forest-derived household income.	
		Consumption survey.	Chi-square testing.

Source: Adapted from Nielsen (2006)

the role of forest extraction over the life cycle of a household, where the varying variable could be age of household head. Other household characteristics with natural variation would be income (poverty), assets, household headship, household size, and so on.

Variables such as prices and institutional arrangements show less variation across households in a community, and a study of these will require careful selection of study area and communities/villages to be included to get the required variation. Market accessibility (central–remote location) is often a key gradient in livelihood strategies (Ellis, 2000) and is often positively correlated with factors such as population density and forest abundance. Interesting

research questions that use this dimension can be developed. On the other hand, for research not related to the location continuum, variation along this gradient is best avoided. To illustrate this point, consider a comparative study of local institutions in terms of the poor's access to the forest: Having selected villages with different institutional arrangements, if these also vary in terms of market access – and market access and institutions are correlated – how can one be sure that the differences observed are due to the different institutional arrangements and not market access?

Some research topics require time series data. Indeed, a large set of new research opportunities opens up with panel data and access to earlier surveys (with household contact information) will enable construction of panel data sets useful for, for example, testing or exploring how environmental dependence varies with types of household trajectories. The study of poverty dynamics, for example, has been greatly facilitated by the better availability of panel data (Deaton, 1997; Carter and Barrett, 2006). Even without household contact details, access to previous survey results may allow for studies on village characteristic trends or provide important contextual background information.

Data collection and analysis

Once the idea and the conceptual framework of the research proposal have been developed; the objectives, research questions and hypotheses defined; and the data needs identified, the laborious tasks of setting up and implementing the data collection instrument – the questionnaire – awaits. This is no trivial matter, as the questionnaire needs to elicit information on all variables necessary for assuring internal validity (in other words, conducting the analyses required to answer the research questions) in a way that does not compromise construct validity (in other words, actually measuring the theoretical concepts outlined in the research questions) (see Box 3.2). Keep in mind, however, that the quality of data arising from even the best questionnaire design can be seriously compromised by faulty data collection. Pitfalls and opportunities of designing questionnaires are presented in Chapter 7, while Chapters 9–11 are devoted to strategies ensuring high quality data during fieldwork.

Data analysis starts when (at least some) data have been collected. But methods for analysing data need to be decided when the research questions are formulated to ensure that data on all required variables are available for research to go beyond descriptions and basic correlations (as well as for proper sampling strategies). Chapter 13 gives an introduction to data analysis.

We stress the need to continue the iterative research design process during data collection. This entails scanning data collected during the pilot test of the questionnaire for detection of ambiguities and keeping an eye on the data collected with the final questionnaire. It is valuable to monitor the collected data in terms of, for example, missing or unreliable data on key variables that could endanger the data analysis. Performing basic correlations and cross-checks on the preliminary data may provide hints for follow-up during collection of contextual data.

Conclusions – what can go wrong

Developing the research proposal is perhaps the most critical stage in the research process, with ample opportunities to commit irreparable mistakes. Some of the most common, and often fatal (for example, in terms of getting funding), are:

- **Lack of clear justification**: What will be the contribution of the research project? Structure the proposal in a way that conveys and justifies the purpose and importance of the proposed research. This includes succinctly outlining: (a) the problem, (b) to whom it is a problem, and (c) what consequences of filling the knowledge gap can be foreseen. This can be done by stating the problem and the general objective at the very beginning of the proposal and providing justification for the existence and importance of the problem in the background section.
- **Lack of in-depth critical literature review**: A poor literature review is characterized by (a) focus on spatially limited references, such as only those relevant to the country where empirical work is planned to take place, (b) lack of consideration of non-sectoral knowledge, for example, a study on common forest resource management could benefit from studies on common pasture or water management, (c) failure to locate key studies and thus the research frontier, (d) emphasis on determining answers rather than identifying questions. A good literature review should result in identification of research gaps and the formulation of a relevant general objective, specific objectives and associated research questions.
- **Too broad/vague objectives, research questions and hypotheses**: Specific objectives should be operational. Research questions and hypotheses need to specify the variables for observation/measurement/analysis and nature of relations/influences. It is advisable to always discuss specific objectives first with peers and supervisors, followed by research questions and hypotheses, before proceeding to specify data needs and choosing methods. This can save a lot of iteration and time.

- **Lack of coherence**: Many proposals do not maintain a chain of logic from the identified research problem through formulation of objectives and research questions to choice of data analysis methods. Potential pitfalls are manifold, for instance, (a) during proposal development the focus is gradually moved from the research questions to other issues, or (b) the proposed data collection does not suffice for testing of the proposed hypotheses due to too few observations or lack of variation in the data.
- **Weak method description**: The reader should get a clear idea of how data will be generated (the surveys, selection criteria for study sites, villages and households, sampling strategy, number of households to be interviewed, questionnaire components) and the methods for analysing the data. Try to become sufficiently familiar with methods to enable their operational integration into proposals and get peer and supervisor comments before finalizing the proposal. Also take the acid test of clarity using your inner eye: when reading your method section can you see clearly, step by step, how required data is generated? If something is missing or unclear, revise the text.
- **Poor quality of writing**: Poor language indicates poor thinking (and ability to implement the research project) and it is not accepted as an excuse that many of us are writing in our second or third language. This can be addressed through courses in academic writing and, best of all, practice. Share draft proposals with peers and supervisors and make sure you respond to critical comments. If necessary, pay a professional copy editor to go through the proposal.

Key messages

Application of an iterative research design process (Figure 3.1), using the research matrix (Table 3.1) and considering the four indicators of the quality of a research proposal (Box 3.2) will minimize incoherence between objectives, research questions, data variables and analyses. A good research proposal is characterized by:

- Addressing an important issue in a novel way.
- Containing information about all the eight steps outlined in Figure 3.1 to answer the 'what' and 'how' questions.
- Having consistency and coherence between the eight steps in the research proposal.
- Being realistic to implement within the time and budget available.

References

Bechhofer, F. and Paterson, L. (2000) *Principles of Research Design in the Social Sciences*, Routledge, London

Beveridge, W. I. B. (1950) *The Art of Scientific Investigation*, William Heinemann, London

Booth, W. C., Colomb, G. G. and Williams, J. M. (2008) *The Craft of Research*, third edition, University of Chicago Press, Chicago, IL

Carney, D. (1998) *Sustainable Rural Livelihoods: What Contribution Can We Make?*, paper presented at the DFID Natural Resources Advisers' Conference, July 1998. Department for International Development, London

Carter, M. and Barrett, C. (2006) 'The economics of poverty traps and persistent poverty: An asset-based approach', *Journal of Development Studies*, vol 42, no 2, pp178–199

Creswell, J. W. (2009) *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, third edition, Sage Publications, London

Deaton, A. (1997) *The Analysis of Household Surveys: A Microeconomic Approach to Development Policy*, The Johns Hopkins University Press, Baltimore, MD

Ellis, F. (2000) *Rural Livelihoods and Diversity in Developing Countries*, Oxford University Press, Oxford

Emerald (2010) 'How to … write a literature review', Emerald Group Publishing, http://info.emeraldinsight.com/authors/guides/literature.htm, accessed 9 April 2010

Hartley, J. (2008) *Academic Writing and Publishing: A Practical Guide*, Routledge, London

Machi, L. A. and McEnvoy, B. T. (2009) *The Literature Review*, Corwin Press, Thousand Oaks, CA

Melbourne (2010) 'Literature reviews', The University of Melbourne, http://unimelb.libguides.com/content.php?pid=87165&sid=648279, accessed 9 April 2010

Nielsen, Ø. J. (2006) 'Welfare consequences of deforestation and forest degradation in Mozambique', unpublished PhD research project proposal, Faculty of Life Sciences, University of Copenhagen, Copenhagen

Obenzinger, H. (2005) 'What can a literature review do for me? How to research, write, and survive a literature review', Stanford University, http://ual.stanford.edu/pdf/uar_literaturereviewhandout.pdf, accessed 9 April 2010

Peters, A. D. (2003) *Winning Research Funding*, Gower, Hampshire

Singh, I., Squire, L. and Strauss, J. (1986) *Agricultural Household Models: Extensions, Applications, and Policy*, World Bank, Washington, DC

Sjaastad, E., Angelsen, A., Vedeld, P. and Bojö, J. (2005) 'What is environmental income?', *Ecological Economics*, vol 55, pp37–46

Sjöberg, L. (2003) 'Good and not-so-good ideas in research: A tutorial in idea assessment and generation', SSE/EFI Working Paper Series in Business Administration No 2003:12, Stockholm School of Economics, Stockholm

Trochim, W. M. K. (2006) 'Research methods knowledge base', www.socialresearchmethods.net/kb/index.php, accessed 31 August 2010

Walliman, N. S. R. (2005) *Your Research Project: A Step-by-step Guide for the First-time Researcher*, Sage, London

Wunder, S. (2001) 'Ecuador goes bananas: Incremental technological change and forest loss', in Angelsen, A. and Kaimowitz, D. (eds) *Agricultural Technology and Tropical Deforestation*, CAB International, Wallingford, pp167–195

Yin, R. K. (2009) *Case Study Research: Design and Methods*, Applied Social Research Methods Series vol 5, Sage, London