Discussion Paper No. 6/2004

Assessing participation in agricultural research projects: An analytical framework

Andreas Neef* and Dieter Neubert**

* Department of Agricultural Development
Theory and Policy, University of Hohenheim

** Department of Development Sociology,
University of Bayreuth

Forschung zur Entwicklungsökonomie und Politik
Research in Development Economics and Policy

Universität Hohenheim
Institut für Agrar- und Sozialökonomie
in den Tropen und Subtropen

University of Hohenheim
Institute of Agricultural Economics and Social Sciences
in the Tropics and Subtropics

Andreas Neef & Dieter Neubert:

Assessing participation in agricultural research projects: An analytical framework

Institute of Agricultural Economics and Social Sciences in the Tropics and Subtropics (Ed.),
Chair Agricultural Development Theory and Policy, Prof. F. Heidhues
Forschung zur Entwicklungsökonomie und Politik – Research in Development Economics and Policy, Discussion Paper 6/2004.

ISSN 1439-4952

Printed in Germany.

Druck: F. u. T. Müllerbader GmbH
Forststr. 18, 70794 Filderstadt, Germany

VERLAG ULRICH E. GRAUER
Hattenbachweg 13, 70599 Stuttgart, Germany
Tel.: +49 (0)711 4570355, Fax: +49 (0)711 4579695
Internet: http://www.grauer.de/, E-mail: grauer@grauer.de

Center for Agriculture in the Tropics and Subtropics

Institute of Agricultural Economics and Social Sciences in the Tropics and Subtropics

- **Department of Agricultural Development Theory and Policy (490a)**
- **Department of International Agricultural Trade and Food Security (490b)**
- **Department of Farming and Rural Systems (490c)**
- **Josef G. Knoll-Visiting Professor for Development Studies**

Discussion papers in this series are intended to stimulate discussion among researchers, practitioners and policy makers. The papers mostly reflect work in progress.

This paper has been reviewed by Prof. Dr. Dr. h.c. Franz Heidhues and Rupert Friederichsen, Institute of Agricultural Economics and Social Sciences in the Tropics and Subtropics, University of Hohenheim and by Prof. Dr. Nguyen The Dang, Thai Nguyen University of Agriculture and Forestry, Vietnam. It is expected that the paper will eventually be published in some other form and that its content may also be revised.

We gratefully acknowledge contributions from the Father and Son Eiselen Foundation Ulm towards the printing costs.

Table of Contents

List of Tables

List of Figures

Abstract

Recent discourse in the field of agricultural research has focused on how to assess and optimize the use of participatory approaches. In this paper, we propose a new Analytical Framework for the Assessment of Participatory Agricultural Research (AFAPAR) that seeks to evaluate participatory research elements along different dimensions and over several research phases and thus takes into account the complexity and dynamics of agricultural research projects. Empirical data from a long-term collaborative research program on "Sustainable Land Use and Rural Development in Mountainous Regions of Southeast Asia" (The Uplands Program – SFB 564) are used to explore the potential and shortcomings of AFAPAR. Findings suggest that while there is a need for further refinement, the analytical framework provides a sound basis for a differentiated assessment of participatory approaches in agricultural research that goes beyond the existing one-dimensional typologies of participatory research with their inherent claim of 'the more participation, the better'.

Keywords: Participatory approaches, agricultural research, analytical framework, assessment

Assessing participation in agricultural research projects: An analytical framework

Andreas Neef and Dieter Neubert

1 Introduction

'Participation' continues to be one of the key concepts of development policy and cooperation. Since the early 1990s, it has spread from development into agricultural research. The traditional approaches of formal agricultural research had come under increasing scrutiny for not delivering applicable results and innovations to farmers in marginal and heterogeneous regions with a high diversity of resource endowment and livelihood conditions (e.g., Scoones and Thompson, 1994; Veldhuizen et al., 1995; Chambers, 1997; Sumberg et al., 2003). The new approach of 'participatory research' promised more user-oriented research and widespread dissemination of pro-poor agricultural technologies. Since then 'participatory research' has been established as a new approach in different kinds of research settings, ranging from plant breeding to natural resource management research (e.g., Lilja et al., 2001; Johnson et al., 2001; Probst, 2002; Pound et al., 2003).

The broad discussion on participatory research implies a high degree of clarity and an overall consensus on its key concepts. When we look deeper into the literature on participatory research, however, we observe a startling variety of approaches, concepts and definitions. The objectives of participatory research still vary between political action and empowerment of the poor and marginalized (Freire, 1973; Fals-Borda and Rahman, 1991) at the one end of the continuum, and more functional approaches centered on involving farmers in the process of technology development and natural resource management at the other end (Werner, 1993; Farrington, 1998; for an overview see: Selener, 1997 and Pound et al., 2003).

In the agricultural science community we still observe a polarization between the promoters of participatory research approaches and the proponents of conventional, formal research. Promoters of participatory research often underline the potential of the new approach and sometimes even present participatory research as a panacea for

all problems of food security and rural poverty. Critics claim that evidence presented from participatory research projects remain isolated 'islands of success' (El-Swaify, Evans et al. 1999: 37). There are also voices warning against a 'tyranny' of participation (Cooke and Kothari, 2001; for an overview of the recent critical discourse on participation see, e.g., Neubert, 2000 and Neef, 2003).

Notwithstanding the polarized debate on the value of participation, participatory approaches in international and national research centres have encountered both successes and failures. It has become evident that the claim of 'the more participation, the better' articulated by the forebears of Participatory Rural Appraisal and Participatory Technology Development in the 1990s has to be replaced by a more grounded discussion of the specific potential and shortcomings of participatory and conventional methods in a particular research setting. As Rocheleau (2003: 169) puts it, "researchers are not asking if participatory methods should be used, but rather when and how, and which type of method, in combination with which traditional research tools". This also calls for a sound assessment of participatory agricultural research that goes beyond the existing one-dimensional typologies of participatory approaches (cf. Section 2).

In this paper, we propose a new analytical framework for assessing participatory elements in agricultural research projects that takes into account the complexity and multidimensional character of participation. Following this introduction, we discuss selected definitions and typologies of participatory agricultural research (Section 2). We then present the analytical framework with its different dimensions and attributes (Section 3) and a case study from a collaborative research program in Thailand and Vietnam to illustrate the potential applications of the framework (Section 4). This is followed by a brief discussion of shortcomings and remaining challenges as regards refining the framework, and some concluding remarks (Section 5).

2 What is participatory agricultural research? A critical review of definitions and typologies

There is no definition of 'participatory research' that is accepted as a general point of reference by the entire agricultural science community. Definitions differ not only in phrasing, but also in the elements used and in the scope of the borders set.

Ashby and Sperling (1995) adopted the following definition of participatory research in agriculture: *"Participatory research approaches are client-driven, decentralized innovation development, with accountability shared between researchers and users and the responsibility for the testing of innovations transferred to the farmers (end-users)."* This definition is relatively narrow, as it puts the development of (technical) innovations in the center of the research effort. Haverkort et al. (1988: 5) define participatory research approaches in a broader sense, as *"the practical process for bringing together the knowledge and research capacities of the local farming communities with that of the commercial and scientific institutions in an interactive way"*. Other definitions point in the same direction, such as that proposed by Narayan (1996: 17): *"Participatory research embodies an approach to data collection that is two-directional (both from the researcher to the subject, and from subject to researcher). The process itself is dynamic, demand-based and change-oriented."* One recent definition stems from Ashby (2003), who states, *"participatory research is a collection of approaches that enable participants to develop their own understanding of and control over processes and events being investigated"*.

One core element of all definitions is the inclusion of clients/farming communities/subjects/participants in research. Additionally, the definitions from Narayan (1996) and Ashby (2003) imply a change in the research process and in power relations. Participatory research is understood as an iterative process, where research questions, objectives and methods are constantly scrutinized and are open for negotiation and revision.

Many analysts of participatory research state that there are different levels and forms of participation in research that are structured by different typologies. Again we face a

considerable diversity that may be represented by the following four examples from Ashby (1996), Lambrou (2001), Probst et al. (2000) and Neubert (2003).

In focusing on participatory technology development (PTD), Ashby (1996: 17; based on Biggs, 1989) constructs a kind of participative hierarchy of five types of participation in agricultural research: (1) nominal (farmers' land and labor are used), (2) consultative (farmers' opinions are sought), (3) action-oriented (farmers are involved in implementing parts of the research); (4) decision-making (farmers take part in decision-making processes); and (5) collegial participation (researchers strengthen farmers' own research).[1] Participatory research in a stricter sense consists of those approaches where farmers are actively involved in the research process itself. The main criteria for participatory research are that farmers take part in the research, thereby influencing the research topic, process and results with their comments, proposals and arguments. Farmers may also engage in more or less formal experimentation, as is central to the concept of Participatory Technology Development (PTD).

In the framework of the CGIAR Systemwide Program on Participatory Research and Gender Analysis (SWPPGRA), Lambrou (2001) developed a typology of seven 'grades' of participation, (1) positivist theoretical research (the least inclusive type of approaches), (2) passive information sharing (farmers are informed of the processes and outcomes of the research), (3) consultative stage (farmers are consulted and their needs may be included in the research design), (4) on-farm testing (researchers continue to dominate the research process, but farmers' expertise is recognized), (5) evaluation (farmers are involved in assessing the process and results of the research), (6) collaborative planning (scientists join hands with farmers in defining problems and in designing the research process), and (7) partnership (scientists and farmers engage in a long-term mutual learning and research process).

[1] Pretty (1995) has developed a similar typology with a stronger focus on development programs and projects. His 'participation scale' spans from manipulative and passive participation to interactive participation and self-mobilization.

These typologies have in common a view of participation as a one-dimensional continuum reaching from projects with a low level of participation to projects with a high degree of participation, implying "that it is possible, desirable and necessary to move across this continuum to the most intense form of participation, a kind of participation 'nirvana'" (Gujit and Shah, 1995: 10). Our own experience suggests that participation takes various forms and dimensions and that conventional, formal research approaches might also show elements of participation, which challenges the widespread view of ideal and prototypical participatory approaches that can be categorically opposed to conventional research. As Lambrou (2001: 10) points out, "different research situations and different time frames call for different grades of participation."

The more elaborate and systematized typology by Probst et al. (2000) indicates key variables to describe and differentiate various research approaches: epistemological assumptions, research objectives, types of participation, the role of external and local actors' involvement, procedures/process and research methods. The combination of these factors helps to identify four approaches, namely (1) transfer of technology (formal research without substantial participation), (2) supply-on-demand (formal research where farmers have control over own or donated research funds), (3) farmers first (where farmers participate in the generation, testing, and evaluation of technology) and (4) participatory learning and action-research (innovation is considered to be the outcome of a mutual learning process amongst a multiplicity of actors and networks). This focus on approaches highlights the different research strategies and underlying philosophies and helps to sharpen the differences between the approaches, which brings more conceptual clarity into the discussion. Additionally, it shows that participatory research must be analysed as a complex undertaking bringing together a number of factors that do not simply result in more or less participation. Probst et al. also consider the fact that farmers may influence research in different ways, either through intensive participation or control over research funds and priority setting (supply-on-demand).

The strength of this typology, its clarity, is at the same time its weakness. The categorization into 'prototypes' with typical features helps to structure the diversity of existing projects, but does not necessarily reflect the reality of research projects. Evidence suggests that projects can change over time, from transfer-of-technology types without any participation to more demand-driven research projects with a high degree of stakeholder involvement (cf. Section 4.3). On the other hand, research projects might involve farmers during the whole process of technology generation, while the dissemination of the technology by local extension workers follows a classical transfer-of-technology approach. Research projects might also have certain features that would classify them as 'farmers first', whereas other features correspond more to the 'supply-on-demand' type.

In an attempt to move beyond the one-dimensional typologies of Ashby (1996) and Lambrou (2001), and taking into account the fact that research projects cannot always be easily categorized into 'prototypical' approaches according to their 'participatory features', Neubert (2003) developed a 'participation profile' taking into account the multidimensional scale of participation. By looking at individual participatory elements in the research process, this profile facilitates the evaluation of participation by using several attributes such as type of research, type of innovation, qualification and skills acquired by farmers, and researcher-farmer interaction. Its purpose is to allow the formulation of specifically suited indicators of participation that could lead to a more differentiated evaluation of participation in agricultural research. Initial tests applying this framework have shown, however, that the participatory profile involving more than 60 different indicators and elements of participation appears too complex for a comprehensive assessment of participatory research. On the other hand, other factors that can be crucial elements in participatory research, such as researchers' attitudes towards and experiences of participation, are still missing from the participation profile. There also remains the problem of including the time factor in the assessment.

3 A proposal for an 'Analytical Framework for the Assessment of Participatory Agricultural Research' (AFAPAR)

This proposal builds partly on the 'participation profile' developed by Neubert (2003). The profile has been conceptually expanded, tested for its applicability and strengthened by including other elements of participation. This process necessarily added to the complexity of the participation profile, requiring the different elements of participation to be aggregated into a comprehensive analytical framework of **six dimensions** of participatory research: The six dimensions are (I) Project type, (II) Research approach, (III) Researchers' characteristics, (IV) Interaction between researchers and (other) stakeholders, (V) Stakeholders' characteristics and (VI) Stakeholders' benefits.

The dimensions are based on the hypothesis that participatory research is subject to at least two basic factors: first, the choice of a participatory method is linked to the technical and scientific questions the research aims to address (dimension I), the approach that it takes (II) and the potential impact that it will have (VI). Second, every research project depends on a set of human factors that influence participation, both on the side of the researchers (III) and the stakeholders (V). The stakeholders' characteristics also reflect their specific position in their social, economic and political environment. Both sides come together in the researcher-stakeholder interaction (IV) that reflects the specific project and the people involved. The order of the dimensions follows the sequence of planning and implementation of a research project. It starts with the overall research questions and the approach, looks at the people involved and their interaction and concludes with the (possible) impact.

Each of the **six dimensions** is described by **five attributes** or indicators with **five different levels**, each providing a certain score, namely 0.0, 0.5, 1.0, 1.5 up to a maximum of 2.0. The maximum score for each dimension is therefore 10.0 (5*2.0). The **attributes** characterizing the various dimensions of participation are listed in Table 1 and are described in detail below (the full tables indicating the different levels of the attributes are included in the Annex). These six dimensions and the related attributes are intended to cover the main elements needed to describe in a systematic

way the participation in a given project. It thus provides an instrument for evaluating participatory elements in a research program and for differentiating between projects.

Table 1. Dimensions and attributes of the analytical framework

Dimensions	**Attributes (each divided into five different levels)**				
I. Project type	a) Type of research	b) Research objectives	c) Potential users and beneficiaries	d) Institutional environment	e) Type of risks involved in the project
II. Project approach	a) Research methodology	b) Research epistemology	c) Research plan	d) Research process	e) Research methods for accessing local knowledge
III. Researchers' characteristics	a) Previous experience of participation	b) Attitudes towards participation	c) Attitudes towards local stakeholders	d) Accountability towards the potential users	e) Commitment to the problem-solving cycle
IV. Researcher-stakeholder interaction	a) Stakeholders involved in the research process	b) Control of research and centers of decision-making	c) Contribution of stakeholders to generation of knowledge	d) Type, frequency and intensity of interaction	e) Investment of resources and payment
V. Stakeholders' characteristics	a) Stakeholders' experience of previous projects	b) Perception of the research project by stakeholders	c) Perception of the researchers by stakeholders	d) Availability of time on the part of stakeholders	e) Farmers' scope for action
VI. Stakeholders' benefits	a) Innovations, improved practices	b) Improvement of skills	c) Creation of knowledge and awareness	d) Empower-ment and self-organization	e) Improvement of livelihoods

I. Project type: how participatory can research be?

It is hypothesized that the project type frames the conditions and the potential for participatory research. The **type of research** is regarded as a crucial indicator for the potential of participatory research. The underlying hypothesis is that the more basic the research is, the less potential it has for adopting a participatory approach involving local stakeholders. For adaptive research, on the other hand, the inclusion of farmers and other local stakeholders appears to be imperative to the success of the research project. The **research objective** of a project may be derived from purely theoretical scientific questions with little or no relation to real-world problems or, at the other extreme, it may exclusively follow stakeholders' priorities. Whether, for example, a research project has as its research objective a) to analyze pesticide and nutrient flows

in the soil, or b) to identify the comparative advantages of different crops, would strongly determine the potential for involving stakeholders in the research process. In the first case, application of research results would not be a criterion of the project's success, while in the second the usefulness of the research is exclusively derived from its direct applicability in the field.

The **potential users and beneficiaries** addressed by the research project would also have a bearing on the participatory potential. At one end of the scale, users of the research results are other researchers only, and the major beneficiary might be the scientific community. At the other end, the main users will be stakeholders in the study area that make use of locally specific results, with no spillover effects on other areas being expected. There has been much debate on who are the 'relevant stakeholders' or 'clients' of agricultural research. For the generation of technical innovations, the primary clients would be farmers and extension workers. However, we opt for a wider definition of agricultural research that includes research on the institutional context of agriculture, such as credit, land tenure, agricultural policies and marketing. This wider definition has strong implications for the range of stakeholders that we have to consider in participatory research approaches.

Another attribute which is crucial for the participatory potential of a research project is whether it was designed and carried out in an **institutional context** that is responsive to the involvement of farmers' perspectives in research. Research projects may involve **risks,** such as the project's failure to find relevant solutions to the problems identified. The time and resources invested might not pay in terms of innovations. Projects may also carry negative side-effects, for example uncontrolled spread of diseases or transgenic plants and animals. In cases where research involves high risks, it might therefore be advisable not to involve a great number of farmers in the experiments, but to start with on-station research first or to work with a few, relatively wealthy farmers who are better able to cope with the risks or who can be compensated for possible crop damage and income losses.

The project type therefore represents a core dimension that cannot be ignored, even when all the actors (researchers, local stakeholders) agree that it is desirable to enhance participation in a given project.

II. Research approach: scientific rigidity versus flexibility of participatory approaches

The second dimension of participation is described by the research approach of a project. In many cases there may be typical combinations of project type (dimension I) and research approach (dimension II) but the one does not necessarily determine the other, and the combinations between the two may differ considerably from one research project to the other.

The **methodology of a project** can follow a mono-disciplinary, reductionist approach, or a more system-oriented and transdisciplinary, holistic one. Reductionist approaches isolating the cause-effect link by creating *ceteris paribus* conditions will likely have greater difficulties in applying participatory elements than system-oriented holistic approaches that are open to a wide range of perspectives and interpretations. A typical reductionist approach would, for example, focus on production of forage legumes without taking into account links to animal husbandry, feed quality or palatability. A holistic perspective, on the other hand, would regard the production of forage as a subsystem that interacts with other subsystems, such as animal production, labor, capital, off-farm income and a set of social and cultural components (cf. Selener, 1997). The more holistic the research methodology is, the higher the probability that the research project will cover the most important aspects of local stakeholders' livelihoods, and hence the greater the chance that stakeholders will be involved in the research.

The attribute **research epistemology** pinpoints the differences between research projects as regards adherence to a scientific paradigm (positivist vs. constructivist). One end of the scale is marked by a purely positivist world view – assuming that reality exists independently from the observer – and a 'hard science' approach where results do not depend on a given context and are considered of general validity. The other end is marked by a purely constructivist world view where reality is seen as

constructed by the observer, research results acquire validity only in a given context, and therefore multiple perspectives and their individual validity are accepted. We do not, however, assume certain disciplines to be *a priori* more receptive to participatory approaches than others. Nevertheless, each discipline tends to adhere to certain epistemological assumptions that pose different challenges for embracing participatory research approaches. Thus, a positivist approach with a fixed set of parameters that describe reality has greater difficulties in applying participatory elements than a constructivist approach that is open to integrating local perspectives and indigenous knowledge without subjugating them completely to scientific explanations of reality.

Efficient implementation of research requires a **research plan**. The more rigid, inflexible and non-responsive to stakeholders' priorities and experiences the research plan is, the more difficult it is for local stakeholders to influence methods and experiments and to negotiate certain aspects of the research plan with the researchers. An open and flexible plan, on the other hand, can be receptive to stakeholder' priorities, experiences and perspectives and provides space for negotiation of methods, experiments and adaptation to new conditions. While the research plan focuses on the practical organization of research, the **research process** addresses the logic of research, i.e. the basic assumption as to how research shall be conducted. In precisely formulated research projects, the research process is generally linear and formalized and its inputs and outputs are clearly defined; changing realities and problems cannot easily be taken into account. At the opposite end of the scale, the research process may be seen as a continuous cycle of learning and action, requiring regular feedback from actors and reviewing the relevance of research objectives and methods.

Whereas the other attributes describe research in general, an assessment of **research methods for accessing local knowledge** is more specific for participatory research. This attribute intends to capture the differences between projects in integrating local knowledge into the process of knowledge generation. Local knowledge may be regarded as totally irrelevant for the research process and no methods are applied to tap it. At the other end of the continuum, local knowledge is seen as a crucial component in the generation of scientific knowledge, and methods of accessing local

knowledge are part and parcel of the project. Methods used to tap local knowledge include various forms of individual and group interviews, Participatory Rapid Appraisal (PRA) tools and participant observation.

III. Researchers' characteristics: differing experiences and attitudes

The first two dimensions, **project type** and **research approach**, describe the formal characteristics of the research project. The third dimension moves the focus to the researchers themselves, who certainly have a major influence on the implementation of any given project. The importance attached to participation and in particular the interpretation of participation as a concept, is based on researchers' characteristics, such as experiences, views, attitudes, norms and values. These may work in different directions; researchers may strengthen the role of participation, even if this runs counter to the outline of the project or is opposed by the project leader, or they may reduce the scope for participation.

The attribute **previous experiences with participation** may range from researchers who have neither theoretical background nor practical experience of participatory approaches, to researchers with long-standing experience of farmer participatory research, such as Participatory Technology Development (PTD) or Participatory Learning and Action (PLA). Sufficient knowledge and practice of participation put the researcher in a position to use the approach in a well-planned, self-reflective way, adapted to the specific project. While there may be some exceptional cases where researchers show 'natural talent' in working with local stakeholders, lack of knowledge, congeniality und experience usually impedes the use of a participatory approach.

The **researchers' attitudes towards participation** are another decisive factor in enabling a successful participatory process. Some researchers may regard participatory approaches as non-scientific or pseudo-scientific and irrelevant for formal agricultural research. Others may see participation as the guiding paradigm for agricultural research. These differences in researchers' attitudes do not need to be related to previous experiences with participation.

Researchers' attitudes towards local stakeholders can depend on a variety of factors, such as educational and cultural background, or prejudices against certain ethnic groups. Researchers may not be interested in local stakeholders' perspectives and treat them as backward and inferior. Other scientists may show great empathy for local stakeholders' perspectives and problems and see them as partners in research and as potential friends.

Researchers' accountability considers the fact that the perspective and priorities of those to whom the researchers feel accountable will influence their decisions and actions in the research process. Researchers may stress only their accountability vis-à-vis project leaders, supervisors or the scientific community, including reviewers. At the other end of the scale, researchers may think that they are only accountable to the local stakeholders as the potential users of the research results.

The last attribute describes the **researchers' commitment to the problem-solving cycle**. With a restricted or focused commitment, researchers think that their mandate ends with the production of scientific knowledge and publications in scientific journals. With a broader commitment, researchers feel they have a responsibility to go through the whole process from problem diagnosis to evaluation and even dissemination of solutions.

IV. Interaction between researchers and local stakeholders: who contributes to the process of knowledge generation?

This fourth dimension analyzes the interface between researchers and local stakeholders, i.e. farmers and other local groups and individuals who are directly or indirectly affected by the research. Interaction between researchers and stakeholder is an important part of the participatory practice of a project. The quantity and quality of this interaction are influenced (1) by both researchers and stakeholders, who may or may not communicate and interact with ease, and (2) by the project and its technical-scientific conception, which might offer more or fewer opportunities for participation.

The **involvement of stakeholders in the research process** may range from complete non-involvement, with a research process handled solely by the professional research staff, to a project where all stakeholders who are directly or indirectly affected by the

research activities are actively involved in the research process. This wider involvement may be found, for instance, in projects relating to natural resource management research and may include the population of a whole watershed.

The **control of research and the centers of decision-making** must be distinguished from the issue of pure stakeholder involvement. Even in cases where involvement of local stakeholders is considerable, researchers may control the research process and be at the center of decision-making, without informing the local stakeholders about their decisions. At the other extreme, farmers and other local stakeholders control the design of the research and the process of implementation, and they carry out their own surveys or experiments.

Contribution to the generation of knowledge may come primarily from the researchers, or from the local stakeholders. At one end of the scale, we find projects where knowledge is produced exclusively by the researchers, who may extract information from local stakeholders and from farmers' fields or similar production units without involving farmers in the assessment of this knowledge. At the other end, generation of knowledge is mainly the task of local stakeholders. This process may be facilitated by the researchers, who may help local stakeholders with the development, monitoring and evaluation of their own experiments and surveys.

The **type, frequency and intensity of interaction** is an attribute that may be assessed comparatively easily. It ranges from projects where researchers never meet local stakeholders, or only when they visit on-farm experimental sites or conduct interviews, to situations where researchers and local stakeholders meet frequently in formal meetings to discuss the research process, evaluate outcomes and plan further steps together.

The **investment of resources and payment** points to the division of inputs between farmers and researchers that marks the relationship between the two. Researchers may provide all inputs, rent the experimental plots and pay local stakeholders for their labor contribution in experiments or surveys. In the opposite case, farmers and other stakeholders pay researchers for their help in identifying solutions and contribute all the research inputs, such as plots, animals and labor.

These attributes indicate the level of involvement of stakeholders in setting research priorities, in decision-making processes concerning specific research activities and in contributing to the outcomes of research by providing knowledge as well as physical and monetary inputs.

V. Stakeholders' characteristics: research(ers) in the eyes of the local people

The fifth dimension of participation, the characteristics of the local stakeholders, is widely neglected in the discussion of participatory approaches. It is often believed that local stakeholders 'automatically' participate if certain conditions are met on the part of the research project, the researchers and their methodological approach. However, this does not reflect local stakeholders' reality. Whether local stakeholders participate in a research project depends to a great extent on their own characteristics. These may differ among individuals or particular livelihood situations and may be influenced by the political, social, economic and cultural environment.

The attribute **experiences with previous projects** highlights the fact that, in many cases, local stakeholders already have several experiences with development or research projects. From the stakeholders' perspective, research and development projects may not be easily distinguished. Both research and development projects may use survey methods for data gathering, organizing experimental trials, and they may both use more or less participatory approaches. These experiences are summed up in this attribute. The extremes of the scale are marked, at one end, by projects that resulted in purely negative experiences, e.g. by not keeping promises, by not informing local people of their objectives, or by not delivering any useful results, innovations or incentives. At the other end are projects that produced positive results and lived up to the expectations that they raised among the local stakeholders.

Stakeholders' perception of the research project focuses on the question of whether the objectives of the project are perceived as irrelevant or even dangerous by the local stakeholders, or whether the project is seen as extremely relevant for solving pressing problems of the farmers.

Local stakeholders' perception of the researchers is a more personalized attribute. The researchers may be perceived as ignorant outsiders, as teachers and experts, or as facilitators of a continuous mutual learning process.

The **time availability of local stakeholders** highlights a crucial factor, particularly in those projects that demand a major commitment on the part of stakeholders in terms of labor and time. Local stakeholders' opportunity costs of time are often underestimated by both scientists and development workers. Poor stakeholders in particular may be concerned primarily with meeting their basic needs and may not have time to get involved in research activities. Other stakeholders, often those who are better-off, may have sufficient time even for continuous involvement in a long-term research project.

The **scope for action** points to constraints facing local stakeholders' that may hamper changes in cropping patterns, integration of high-performing animal breeds or adoption of soil conservation practices. In an extreme situation, stakeholders do not see any scope for changing their agricultural practices or farming systems due to extreme poverty, lack of access to markets, unfavorable agro-ecological conditions or a repressive institutional environment. At the other end, stakeholders might have a variety of options and are completely free in their decision-making, since they enjoy a sound base in terms of economic resources, good access to markets, favorable agro-ecological conditions and a highly supportive institutional environment.

VI. Stakeholders' benefits: tangible and non-tangible outcomes of participatory agricultural research

The sixth dimension of the framework deals with the crucial question of benefits in participatory research. The objective is to look at different kinds of benefits separately. The question here is not only whether stakeholders reap some benefit from the research project, but also whether the benefits open up spaces for stakeholders' choices and decisions. This shall be explained in more detail.

The primary focus of development-oriented agricultural research is the generation of **technical and institutional innovation** and **improved practices.** However, a research project may not provide any technical or institutional innovation and may not lead to improved practices by the stakeholders. The next level up may be a project that

provides turnkey solutions that may be observed on demonstration plots or in showcases of institutional innovations where the stakeholders have the freedom to adopt or reject the innovations. On a higher level, turnkey solutions are tested under on-farm conditions and farmers can make their choice after proper evaluation. The level of participation increases further when flexible solutions can be tested by stakeholders themselves and adapted to their own specific situation. The highest score for participation is given to projects providing a range of different solutions from which the stakeholders can choose, and which they can easily fine-tune to their individual conditions.

The **improvement of stakeholders' skills** can be analysed from the non-participatory extreme of zero improvement at the one end of the continuum, to improving diagnostic, technical, managerial or organizational skills, and the improvement of experimental and self-help capacities of the stakeholders at the other end.

The **creation of knowledge and awareness** among stakeholders can cover a spectrum from none to (1) knowledge on a specific topic or commodity, (2) knowledge on causal relationships in agro-systems, (3) knowledge on how whole systems function and what positive or negative effects certain practices may have, and finally to (4) enabling stakeholders to blend local with scientific knowledge.

The assertion that local stakeholders should be empowered and their self-organization improved by research activities is rooted in Paolo Freire's work on adult education in Brazil. He stated that knowledge is generally monopolized by an elite and used to further oppress the poor and marginalized (e.g., Freire, 1973). While many proponents of participatory agricultural research emphasize a more functional role of participation in delivering easily adoptable technologies, the question of power relations in participatory approaches is still of great relevance. **Empowerment and self-organization** may range from none to (1) providing indirect effects, (2) strengthening social capital by reducing social conflicts, (3) promoting collective action or, most participatory in a Freireian sense, (4) promoting political empowerment.

The last benefit analysed is the **improvement of local stakeholders' livelihoods**. The negative extreme is simple: no improvement in the livelihoods of stakeholders directly

involved in the project. Along the continuum of this attribute, the benefit increases not only in amount, but also in range and strengthened self-regulation. The next steps are additional enhancement of human capacities within the institutional frameworks, increased resilience of local livelihoods and ecosystems to external shocks and the capacity of local stakeholders and institutions to adapt to changing conditions. The upper end of the scale is marked by increased resilience in this sense, additional strengthening of the ecosystem, and positive side effects like consumer health and improved water quality.

Users of the analytical framework should bear in mind that the dimensions and, to an even greater extent, the attributes, are interlinked but do not determine each other. The application of the instrument is based on interpretations that are subject to discursive agreement between those involved in a project and its analysis. The detailed comments above are intended to provide guidance as to how the steps of the scales (0.0 to 2.0) attached to the attributes may be applied and hence give clear hints for the assessment. We do not assume that different users of the framework will produce exactly the same results. However, when the instrument and its application are well prepared and discussed, the results should show similar trends and ratings. When the framework is used with the same people in a given environment (e.g. institution, project with subprojects, area, village), comparisons over time and between different projects or subprojects are possible and should even produce some kind of comparative rating. This can be supported by intensive discussions on attributes and indicators and their application. In the next section, we provide a case study from The Uplands Program, a Thai-Vietnamese-German collaborative research program on ‘Sustainable Land Use and Rural Development in Mountainous Regions of Southeast Asia’, to show the potential of the analytical framework, which was developed in the context of this program.

4 Case study: Comparative assessment of projects in The Uplands Program

The objectives of this collaborative research program are to contribute (1) to a better management of natural resources and (2) to the improvement of rural livelihoods in mountainous regions of northern Thailand and northern Vietnam. The Uplands Program commenced in July 2000 under the leadership of the University of Hohenheim, Stuttgart, Germany, in cooperation with four Thai universities and four Vietnamese academic research organizations and universities. The program is organized in phases of three years each and may, if successful, be extended to four phases (i.e. until 2012). In its current second phase (July 2003-June 2006), it comprises a total of 16 subprojects covering various disciplines ranging from soil science, agronomy, agro-ecology and animal husbandry to economics and social science. The Analytical Framework for Assessing Participatory Agricultural Research (AFAPAR) was developed, tested and refined as part of The Uplands Program by a particular subproject on participatory research approaches.[2] In this section we present the assessment of selected subprojects of The Uplands Program to show how the analytical framework can be applied.

As a starting point for the assessment, the framework was presented to Thai and German members of The Uplands Program during a number of workshops. Project leaders and research associates were asked to evaluate their own projects with regard to participatory potential, elements and methods by filling in tables with the different dimensions and attributes of participation. At the same time, members of the participatory methods project team did their own 'external' evaluation based on previous observations, informal talks and formal interviews. In Vietnam, the framework was applied during meetings between Vietnamese research associates and a member of the subproject analysing the potential and constraints of participatory research approaches. Respondents were requested to fill in the tables in the presence of

[2] The project 'Potentials and constraints of participatory research approaches for sustainable development in mountainous regions of Southeast Asia' analyses the application of participatory methods in agricultural research. Members of the project are Franz Heidhues, Andreas Neef, Dieter Neubert, Rupert Friederichsen, Benchaphun Ekasingh, Nguyen The Dang and Eugen Buss.

the German research associate, who was able to answer questions directly and further explain and clarify the different dimensions and attributes.

4.1 Comparative assessment of projects from different disciplines

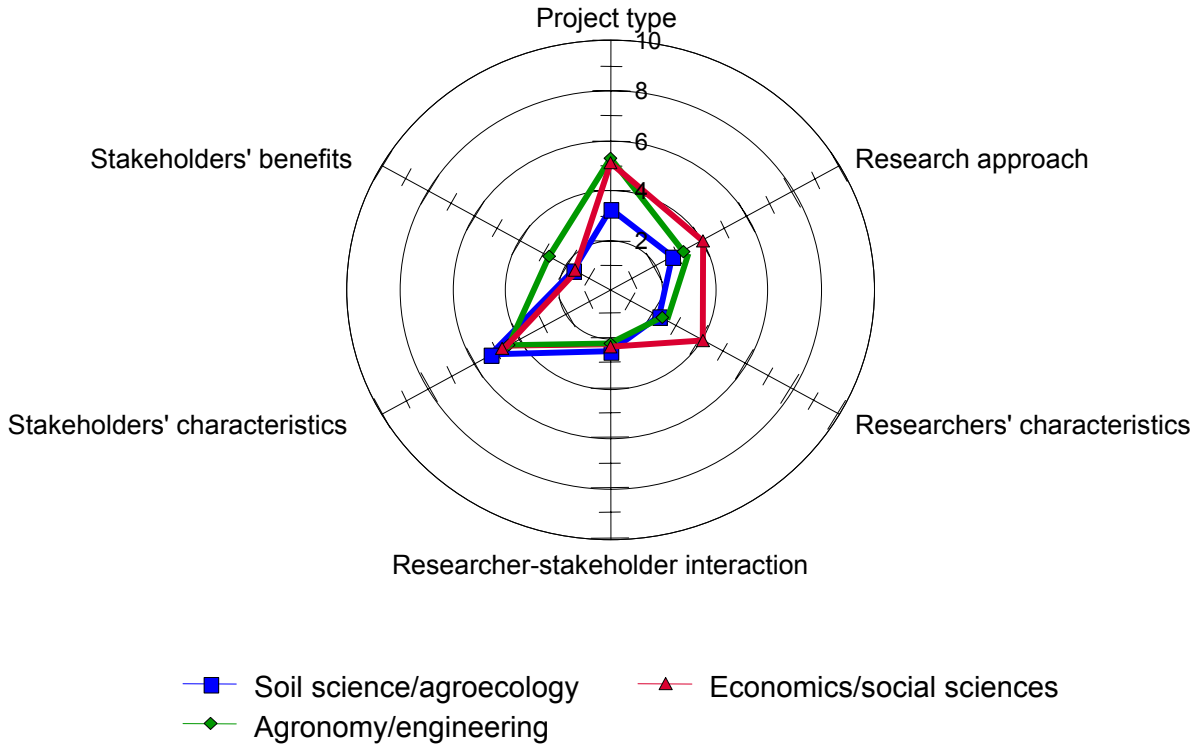
A first possible application of the analytical framework is for comparing subprojects from different disciplines. One of our hypotheses was that in the field of natural sciences (e.g. soil science, agroecology), with its emphasis on basic research, the potential for applying participatory approaches and the actual degree of participation are lower than in the field of agronomy and engineering, in which agricultural technologies are developed.

The external assessment by a member of the subproject on participatory research approaches suggests, however, that while differences between natural sciences and agronomy/engineering projects exist, these are much less accentuated on average than was presumed (Figure 1). The score for *project type* (participatory potential) and *stakeholders' benefits* is slightly higher in the case of the agronomy/engineering projects, but no striking differences could be observed as regards the dimensions *researchers' characteristics*, *researcher-stakeholder interaction* and *stakeholders' characteristics*. The differences are likely to become greater in subsequent phases of the research program, when technology development will be carried out in closer cooperation with farmers. The projects in the field of economics and social sciences had a similar score to that of the agronomic/engineering projects for the dimension *project type*, but yielded higher scores for *research approach* and *researchers' characteristics*. The score for *researcher-stakeholder interaction* was as low as for the other projects, and *stakeholders' benefits* were ranked somewhat lower than for the agronomic/engineering projects and similar to the natural sciences projects.

These observations suggest that (1) there is no *a priori* propensity for particular disciplines to be more 'participatory' than others, (2) most subprojects have not yet fully exploited their 'participatory potential' and, as a consequence, (3) particular attention has to be given to the dimensions *researchers' characteristics*, *researcher-stakeholder interaction* and *stakeholders' benefits*, if meaningful, or optimized, participation of local stakeholders is to be envisaged in subsequent phases of the

projects. This reflects the complex interplay between 'technical-scientific factors' and 'human factors' in a given research project.

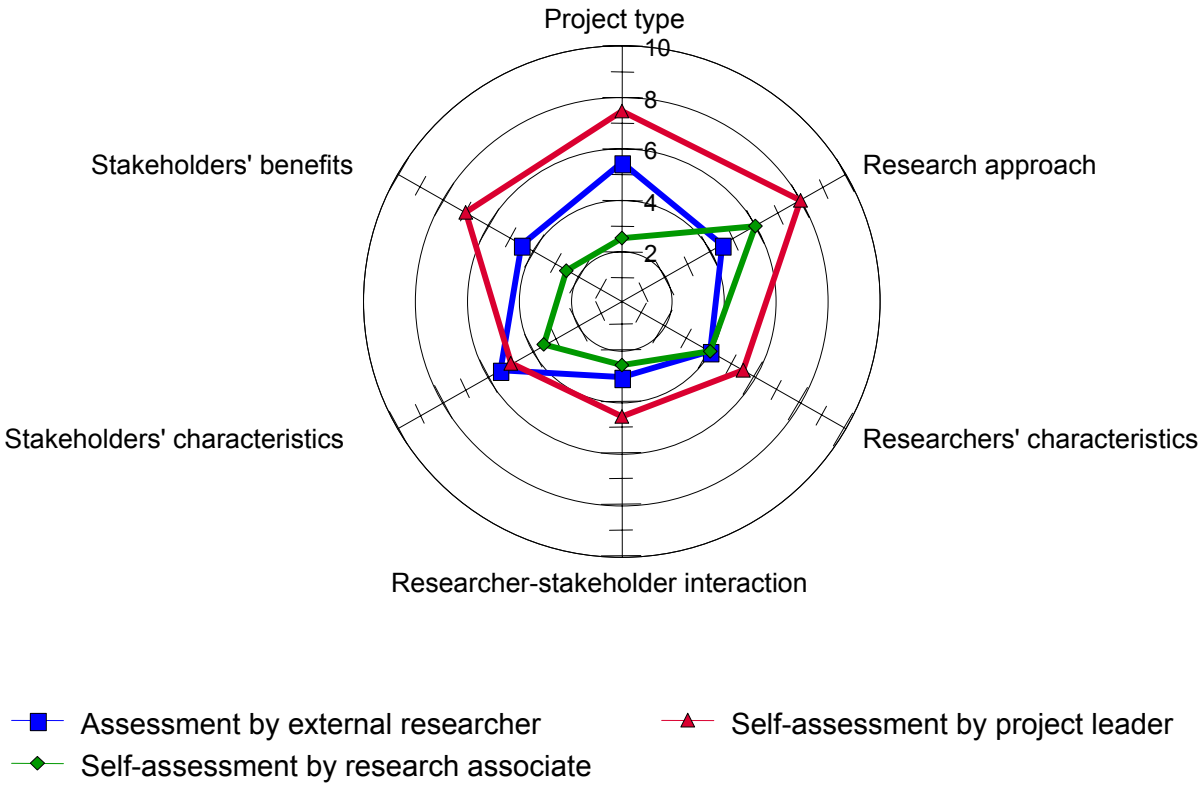
Figure 1. Comparison between projects from different disciplines in the Thai part of The Uplands Program (external assessment)



4.2 Comparison between external evaluation and self-assessment

The analytical framework can become a 'discussion platform' if external evaluations (e.g., by a member of the subproject on participatory methods) are contrasted with self-assessments by the project leaders and/or the research associates involved. The example presented in Figure 2 shows how different 'realities' are constructed by (1) the external observer in the project on participatory methods, who bases his judgment on observations, interviews and the analysis of the project proposal, (2) the research associate who did the main fieldwork, and (3) the project leader responsible for designing the project.

Figure 2. Comparison between external and self-assessment of participatory elements in projects



The main point here is not to establish which of the three assessments comes closest to reality. The value of this application of the analytical framework is rather that the different perceptions were made transparent and could become a subject of discussion. The question, then, is what conclusions one can draw from the different perceptions and what arguments the different 'assessors' find for their assessments in a joint discussion. In a second step, this can lead to rethinking project types and approaches, to greater reflection on the use of participatory and non-participatory methods in a given research context, and to improved planning of future phases of the project.

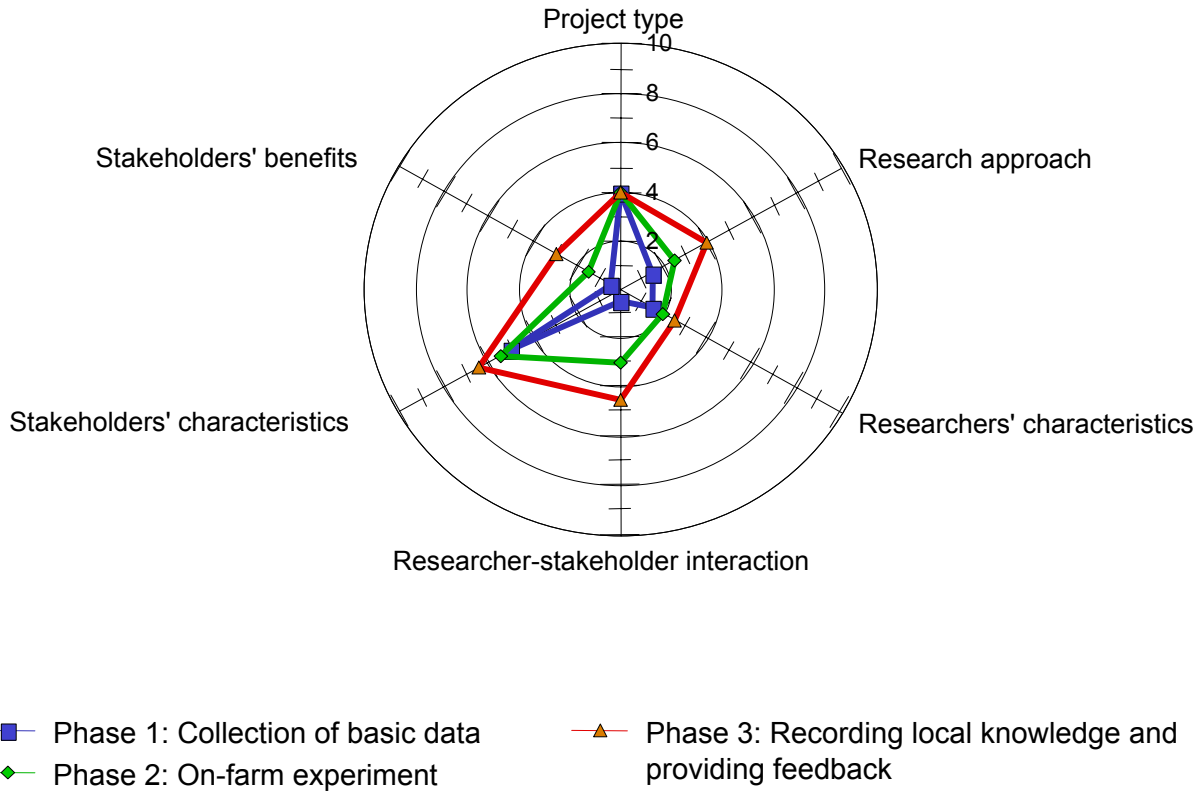
4.3 Analysis of the development of projects over time

Most research projects are dynamic 'organisms' that undergo changes in the course of the research process, for instance through the different researchers who carry them out, the reality encountered in the field, or interventions from the people affected by the research. In many projects these dynamics of research are already integrated into the research plan. This applies to different features of the research, and also the degree to

which participatory elements are used in a certain project. With the help of the analytical framework, this temporal dynamism of research projects can be analyzed and visualized.

An illustrative example is a subproject that started with a general collection of agro-ecological data from different farmers' fields (Figure 3). These farmers were neither integrated into the knowledge generation process, nor were they well informed about the purpose of the project *(phase 1: September 2000 – March 2001)*. At the behest of the project leader, the research associate established an on-farm-experiment. Negotiations with the field owner, with assistance from the project on participatory methods, led to a research contract in which the rights and duties of both parties were agreed upon. The on-farm experiment was predominantly researcher-controlled; the farmer followed the instructions of the research associate as to the management of the trial *(phase 2: April 2001 – February 2002)*.

Figure 3. Evolution of participatory elements over different phases in a project of The Uplands Program



Following discussions between project leaders of this project and a member of the project on participatory methods**,** a study on local knowledge was initiated, involving a group of farmers interested in the subject. The study carried out jointly by members of the two projects was combined with farmers' feedback on the research results of the on-farm experiment and the joint analysis of the findings *(phase 3: March 2002 – August 2002)*. While the research associate in this project remained fairly sceptical about participatory methods (reflected in the relatively small changes of researchers' characteristics), the research approach was changed in favour of more participatory elements, the interaction between researcher and stakeholders was significantly enhanced and stakeholders' interest in the research and their perceived benefits were increased.

5 Discussion and conclusions

The analytical framework was developed to serve a number of objectives. It

- enables – with its subdivision into dimensions and attributes – an analytical process that helps to differentiate and characterize participation in a given project as systematically and precisely as possible;
- sets out to provide a basis for self-reflection and joint discussions on the usefulness of applying participatory research elements in a specific research context;
- provides insights into the relationship between 'participatory potential' and actual participatory elements in a research project (relation between dimension I vs. dimensions II-VI);
- identifies particular strengths, opportunities and limitations of participation in a research project;
- monitors the evolution of research projects with regard to participatory elements over several research phases;
- can be used to analyze the correlation between certain attributes of participation for a given research project; and finally,
- can be applied in integrating participatory elements into planning consecutive phases of a research project.

Irrespective of its apparent potential, the analytical framework should not be overstretched and seen as a standardized instrument to 'measure' precisely the 'degree of participation', or construct a universal 'participation index'. Even when projects are assessed as being more or less 'participatory', it must be emphasized that the analytical framework is not intended to

- judge the scientific quality of research projects. The decision whether science is 'good' or 'bad' cannot be based on the degree of stakeholder participation or on any other single criterion;
- set benchmarks for projects against a given scale. Hence, it does not follow the principle of 'the more participation, the better'. The aim is not to maximize the application of participatory methods, but to optimize the use of participatory approaches in agricultural research (cf. Kanji and Greenwood, 2001).

The application of the analytical framework showed that it needs further elaboration and refinement. In its current state, the framework apparently lends itself better to natural sciences-oriented agricultural research projects than to socio-economic research in farming communities. Some researchers working with a relatively large sample of farmers and other local stakeholders had difficulties in attributing stakeholders' characteristics to a particular score during the self-assessment. If several researchers were working on a particular project, it was difficult to assess researchers' characteristics, which often differed significantly among the researchers involved. A separate analysis for each researcher involved may be useful in such cases. A simple average of the score is insufficient, because one person can influence the project more than another. Another shortcoming of the framework is the lack (or impossibility) of calibration. Ratings by different assessors will not be completely identical and the 'distances' between the different scores for the attributes are somewhat artificial. Quantitative analysis based on this framework can therefore only be carried out with a considerable degree of caution.

Notwithstanding these limitations, we think that the framework is one answer to the entrenched methodological discussion on participatory research. Once the plea for participatory research is stripped of its ideological components and realized in research

projects, the discussion moves beyond the simple dichotomy of advocates and opponents. For a critical and productive assessment of participatory research, we need a differentiated discussion on how participatory research is put into practice and on its potential and limitations in a specific project. For too long, the analytical and descriptive instruments used in the discussion on participatory research have been based on oversimplified typologies, trying to analyse projects based on a scale of more or less participation. This impedes a differentiated discussion. The analytical framework presented here tries to overcome these limitations and may serve as a starting point for an improved methodology that offers the possibility to assess participatory methods in a more transparent and comprehensible way while doing justice to the multidimensional, dynamic nature of participatory research projects in agriculture and natural resource management.

Acknowledgements

We would like to thank our colleagues in The Uplands Program who made the application of the analytical framework possible. The analytical framework was the result of many discussions in the project on the potentials and constraints of participatory approaches in Thailand and Vietnam. Especially Rupert Friederichsen, who applied different versions of the framework, helped us with his constructive criticism. We are indebted to Franz Heidhues, who gave valuable comments on earlier versions of this paper. We are grateful to Anna Canning for reading through the English. The financial support of the Deutsche Forschungsgemeinschaft, Germany, in carrying out this study is gratefully acknowledged.

References

Ashby, J.A. 1996. 'What do we mean by participatory research in agriculture?' In: CIAT (ed.) New frontiers in participatory research and gender analysis. CIAT (Centro International de Agricultura Tropical), Cali, Colombia.

Ashby, J.A. 2003. Introduction: Uniting science and participation in the process of innovation – Research for development. In: Pound, B., Snapp, S., McDougall, C. and Braun, A. (eds.) Managing natural resources for sustainable livelihoods: Uniting science and participation. Earthscan, London, pp. 1-19.

Ashby, J.A. and Sperling, L. 1995. Institutionalizing participatory, client-driven research and technology development in agriculture. *Development and Change* 26: 753-770.

Biggs, S. D. 1989. Resource-poor farmer participation in research: a synthesis of experiences from nine national agricultural research systems. OFCOR comparative study paper. ISNAR, The Hague.

Chambers, R. 1997. Whose reality counts? Intermediate Technology Publications, London.

Cooke, B. and Kothari, U. 2001. Participation: the new tyranny? Zed Books, London, New York.

El-Swaify, S. and Evans, D. with an international group of contributors, 1999. Sustaining the global farm –Strategic issues, principles and approaches. 10th International Soil Conservation Organization Conference, West Lafayette, Indiana.

Fals-Borda, O and Rahman, M.A. (eds) 1991. Action and knowledge. Breaking the monopoly with participatory action research. Intermediate Technology Publications, London.

Farrington, J. 1998. Organisational role in farmer participatory research and extension: lessons from the past decade. Natural Resources Perspectives No. 27. Overseas Development Institute (ODI), London.

Freire, P. 1973. Education for critical consciousness. Seabury Press, New York.

Gujit, I. and Shah, M.K. 1998. Waking up to power, conflict and process. In: Gujit, I. and M.K. Shah (eds.) The myth of community: gender issues in participatory development. Intermediate Technology Publications, London, pp. 1-23.

Haverkoort, B., Hiemstra, W., Reijntjes, C. and Essers, S. 1988. Strengthening farmers' capacity for technology development. *ILEIA Newsletter. Issue on Participative Technology Development*, 4(3): 3-7.

Johnson, N., Lilja, N. and Ashby, J. 2001. Characterizing and measuring the effects of incorporating stakeholder participation in natural resource management research: Analysis of research benefits and costs in three case studies. CGIAR Systemwide Program on Participatory Research and Gender Analysis, Working Document No. 17, Cali, Colombia.

Kanji, N and Greenwood, L. 2001. Participatory approaches to research and development in IIED: Learning from experience. International Institute of Environment and Development (IIED), London.

Lambrou, Y. 2001. A typology: Participatory research and gender analysis in natural resource management research. Working document No. 15, CGIAR Systemwide Program on Participatory research and gender analysis. Cali, Colombia.

Lilja, N., Ashby, J.A. and Sperling, L. (eds.) 2001. Assessing the impact of participatory research and gender analysis. Participatory Research and Gender Analysis Program, Coordination Office, International Center for Tropical Agriculture, Cali, Colombia.

Narayan, D. 1996. Toward participatory research. World Bank Technical Paper No. 307, World Bank, Washington, DC.

Neef, A. 2003. For discussion: Participatory approaches under scrutiny – Will they have a future? *Quarterly Journal of International Agriculture*, 42 (4): 489-497.

Neubert, D. 2000. A new magic term is not enough. Participatory approaches in agricultural research. *Quarterly Journal of International Agriculture*, 39 (1): 25-50.

Neubert, D. 2003. Are promises kept?: Towards a framework for the evaluation of participatory research. In Neef, A. (ed.) Participatory technology development and local knowledge for sustainable land use in Southeast Asia. Proceedings of an International Workshop, 6-7 June 2001, Chiang Mai (on CD-Rom).

Pound, B., Snapp, S., McDougall, C. and Braun, A. (eds.) 2003. Managing natural resources for sustainable livelihoods: Uniting science and participation. Earthscan, London.

Pretty, J. 1995. Participatory learning for sustainable agriculture. *World Development* 23(8): 1247-1263.

Probst, K., Hagmann, J., Becker, T. and Maria, F. 2000. Developing a framework for participatory research approaches in risk-prone environments. Paper presented at Deutscher Tropentag, University of Hohenheim, Stuttgart, Germany.

Probst, K. 2002. Participatory Monitoring and Evaluation: A promising concept in participatory research? Lessons from two case studies in Honduras. Margraf, Weikersheim, Germany.

Rocheleau, D. 2003. Participation in context: What's past, what's present, and what's next. In: Pound, B., Snapp, S., McDougall, C. and Braun, A. (eds.) Managing natural resources for sustainable livelihoods: Uniting science and participation. Earthscan, London, pp. 169-183.

Scoones, I. and Thompson, J. (eds.) 1994. Beyond farmer first: Rural people's knowledge, agricultural research and extension practice. Intermediate Technology Publications Ltd., London.

Selener, D. 1997. Participatory action research and social change. Cornell University, Ithaca, New York.

Sumberg, J., Okali, C. and Reece, D. 2003. Agricultural research in the face of diversity, local knowledge and the participation imperative: theoretical considerations. *Agricultural Systems* 76: 739-753.

Veldhuizen, L. van, Waters-Bayer, A. and de Zeeuw, H. 1995. Developing technologies with farmers. Zed Books, London.

Werner, J. 1993. Participatory development of agricultural innovations. Procedures and methods of on-farm research. GTZ, Eschborn.

Annex: Analytical Framework for the Assessment of Participatory Agricultural Research (AFAPAR)

1. Project type
- Type of research
- Research objectives
- Potential users and beneficiaries
- Institutional environment of the research project
- Type of risks involved in the project

2. Research approach
- Research methodology
- Research epistemology
- Research plan
- Research process
- Research methods for accessing local knowledge

3. Researchers' characteristics
- Researchers' previous experience of participation
- Researchers' attitudes towards participation
- Researchers' attitudes towards local stakeholders
- Researchers' accountability towards the potential users
- Researchers' commitment to the problem solving cycle

4. Interaction between researcher and other stakeholders
- Stakeholders' involved in the research process
- Control of research and centers of decision-making
- Contribution of stakeholders to generation of knowledge
- Type, frequency and intensity of researcher-stakeholder interaction
- Investment of resources and payment

5. Stakeholders' characteristics
- Stakeholders' experience of previous projects
- Perception of the project by local stakeholders
- Perception of the researchers by local stakeholders
- Availability of time on the part of stakeholders
- Farmers' scope for action

6. Stakeholders' benefits
- Technical or institutional innovations, improved practices
- Improvement of skills
- Creation of knowledge and awareness
- Empowerment and self-organization
- Improvement of livelihoods

Table 2. AFAPAR Dimension I. Project type

	Score 0.0	Score 0.5	Score 1.0	Score 1.5	Score 2.0
I.a) Type of research	Basic research	Strategic research	Research contains elements of both more basic and more applied research	Applied research	Adaptive research
I.b) Research objectives	Research objectives follow strictly scientific questions, are not derived from real-world problems, application of research results in the field is no criteria for success of the research	Research objectives are derived from real-world problems, applicability of research results in agricultural practice is desired, but not a priority	Research objectives are derived from real-world problems, knowledge transfer to users is regarded as a condition for applicability of results	Research objectives take into account stakeholders' priorities, applicability of research results is sought by appropriate measures	Research objectives follow exclusively stakeholders' priorities, the usefulness of the research is exclusively derived from its direct applicability in the field
I.c) Potential users and beneficiaries	Exclusive users of the research results are other researchers, the major beneficiary might be the scientific community	Main users of the research results are other researchers and policy makers at the national or regional level, beneficiaries are the scientific community and/or the population of a larger area	Main users of the research will be government agencies (e.g., extension service, cadastral officers), NGOs or development projects, local communities might benefit indirectly from the results	Main users and beneficiaries of the research will be farmers and other stakeholders in the study area, spillover effects to other regions can not be controlled or are even desired	Main users and beneficiaries will be all relevant stakeholders in the study area, the results are locally specific (no spillover effects to be expected)
I.d) Institutional environment of the research project	The research project is designed and carried out in an institutional environment that is not responsive to local stakeholders' needs and priorities	The research project is designed in an enabling institutional environment, but is carried out in an institutional context that is not responsive to local stakeholders' needs and priorities	The research project is designed in an enabling institutional environment; it is carried out in an institutional context in which local stakeholders' needs and priorities are not given high priority	The research project is designed in an enabling institutional environment; it is carried out in an institutional context in which local stakeholders can influence the research agenda to a certain extent	The research project is designed and carried out in an institutional environment in which priority is given to local stakeholders' needs and perspectives
I.e) Risks involved in the project	Research involves extremely high risks, such as total crop damage, social disruptions, uncontrolled spread of diseases or genetically modified plants and animals	Research involves major risks, such as temporary reduction of productivity, minor social or ecological changes in the study area or failure of the project; risks are difficult to foresee and to control	Research involves some risks, but these risks can be controlled through appropriate measures, such as working on smaller scale or providing compensation for farmers	Research involves only minor risks, innovations have been tested on-station or under different economic, agro-ecological and institutional conditions	Research involves practically no risks, innovations and methods have been successfully tested under similar conditions in other regions

Table 3. AFAPAR Dimension II. Research approach

	Score 0.0	Score 0.5	Score 1.0	Score 1.5	Score 2.0
II.a) Research methodology (general)	Reductionist and monodisciplinary, no links to other disciplines established	Reductionist and monodisciplinary, links to other disciplines are established if the need arises	Reductionist, but embedded in a multi-disciplinary context, links to other disciplines are institutionalised	System-oriented and interdisciplinary, links to other disciplines are institutionalised, research activities are carried out jointly	System-oriented and transdisciplinary (boundaries between disciplines are crossed or even dissolved)
II.b) Research epistemology	Positivist world-view (reality exists independently from the observer), "hard science", results do not depend on the given context and are of general validity	Primarily positivist world-view, scientist acknowledges that results may partly depend on the context, rigorous control of "disturbing" factors *(ceteris paribus condition)*	Scientist accepts complexity and diversity of factors, attempt to control as many factors as possible in order to obtain results of relatively high validity	Primarily constructivist world-view (reality is constructed by the observer), validity of research is obtained through cross-checking of evidence (triangulation)	Constructivist world-view, "soft science", results obtain their validity only in a given context, acceptance of multiple perspectives with their individual validity
II.c) Research plan	Rigid, inflexible, not receptive to stakeholders' priorities and experiences	Rigid and relatively inflexible, methods and experiments can only be modified if the plan turns out to be totally unrealistic	Relatively rigid, but stakeholders can have some influence on methods and experiments if they have strong arguments	Open and flexible, stakeholders are able to negotiate on certain methods and experiments	Open, flexible, receptive to stakeholders' priorities and experiences, methods and experiments are widely negotiable
II.d) Research process	Research process is linear and formalised, inputs and outputs of the research process are clearly defined, changing realities and problems are not taken into account	Research process is linear and formal research is predominant, inputs and outputs are defined, but can be adapted if realities and problems make changes necessary	Research process is iterative, existing information for the adaptation of research questions to changing realities and problems is used in a systematic way	Research process is iterative, information is gathered from various sources and by different means (workshops, reports) in order to adapt and refine research procedures	Research process is seen as a continuous cycle of learning and action, regular feedback from actors and rethinking of the relevance of research objectives and methods is sought for
II.e) Research methods for accessing local knowledge	Local knowledge is not regarded as relevant for the research process, no methods are applied to tap local knowledge	Local knowledge is regarded as relevant, but inferior to scientific knowledge; access is sought through formal interviews by means of (semi-) standardized questionnaires	Local knowledge is regarded as relevant for the research project; methods include informal talks, open interviews or Rapid Rural Appraisal (RRA) tools	Local knowledge is regarded as an important complementary aspect of the research; methods include informal talks, open and semi-structured interviews and Rapid Rural appraisal (RRA) tools	Local knowledge is seen as a crucial component in the generation of scientific knowledge; methods include various forms of individual and group interviews, PRA tools and participant observation

Table 4. AFAPAR Dimension III. Researchers' characteristics

	Score 0.0	Score 0.5	Score 1.0	Score 1.5	Score 2.0
III.a) Researchers' previous experience of participation	Researchers do not have any theoretical background nor practical experiences with participatory approaches	Researchers have no practical experiences with participatory research approaches, but follow the discussions in journals and project documents	Researchers' experiences are reduced to short-term PRA exercises and/or researcher-managed on-farm trials	Researchers have several experiences with the use of participatory survey methods or with farmer-managed on-farm trials	Researchers have long-standing experiences with farmer participatory research, such as PTD or PLA
III.b) Researchers' attitudes towards participation	Participation is regarded as non-scientific, pseudo-scientific and/or irrelevant for research	Researchers are skeptical about the usefulness of participatory approaches, they consider the costs of participation to be very high	Researchers are positive towards participatory approaches, but feel insecure when applying them in the field	Researchers regard participatory research as an important complement to conventional research approaches	Participatory approaches are regarded as the guiding paradigm for agricultural research
III.c) Researchers' attitudes towards local stakeholders	Researchers are not interested in local stakeholders' perspectives and/or treat them as inferior and backward	Researchers listen to local stakeholders' concerns as a matter of politeness and treat them in a reserved manner	Researchers are interested in local stakeholders' perspectives, they treat them in a friendly and respectful way	Researchers take into account local stakeholders' perspectives and problems in their research, and treat them as colleagues	Researchers show great empathy for local stakeholders' perspectives and problems and treat local stakeholders as partners or even friends
III.d) Researchers' accountability towards the potential users	Researchers think that they are accountable towards their supervisors or their superiors, but not towards the potential users of the research results	Researchers think that they are primarily accountable towards their superiors; they also feel that the potential users should have some benefit from the research	Researchers try to balance accountability towards their superiors and accountability towards the potential users of the research results	Researchers think that they are primarily accountable towards the potential users of the research results	Researchers think that they are only accountable towards the potential users of the research results
III.e) Researchers' commitment to the problem-solving cycle	Researchers think that their mandate ends with the production of scientific knowledge and publications in peer-reviewed scientific journals	Researchers feel committed to produce scientific knowledge and present it in an easily accessible way to the end-users	Researchers think that their mandate goes beyond the production of knowledge and that they are responsible for providing adoptable solutions	Researchers think that they should not limit themselves to providing solutions but that they should also monitor the process of dissemination	Researchers feel responsible to go through the whole process from problem diagnosis to evaluation and dis-semination of solutions

Table 5. AFAPAR Dimension IV. Interaction between researchers and (other) stakeholders

	Score 0.0	Score 0.5	Score 1.0	Score 1.5	Score 2.0
IV.a) Stakeholders involved in the research process	No stakeholders involved in the research process except the researchers themselves	Farmers involved in on-farm experiments and/or local communities involved in formal surveys are the only stakeholders beside the researchers	Farmers and other members of the local community who are interested in and/or affected by the research activities are involved in the research process	The research process involves local communities, researchers, extension workers, and/or NGOs and development practitioners	All stakeholders who are directly or indirectly affected by the research activities are actively involved in the research process
IV.b) Control of research and centers of decision-making	Researchers control the research process, researchers are the center of decision-making, local stakeholders are not informed about the decisions	Researchers control the research process, local stakeholders might be informed what will be done or what has been done in the research project	Researchers control most of the research process, design surveys and experiments after consulting local stakeholders	Local stakeholders and researchers make joint decisions and share the control of research questions and the research process	Farmers and other local stakeholders control the research process, design and/or carry out their own surveys/experiments
IV.c) Contribution of stakeholders to generation of knowledge	Knowledge is exclusively produced by the researchers; researchers extract information from local stakeholders and/or from farmers' fields or other production units	Knowledge is primarily produced by the researchers; research is extractive, but data is cross-checked with respondents, local stakeholders ask for information from researchers	Knowledge is produced by researchers and farmers together; experiments are designed by researchers and implemented by farmers, results and solutions are openly discussed, analysed and shared	Knowledge is produced by farmers, researchers and other stakeholders in a joint process; all partners involved play a role in selecting and testing potential solutions and evaluating the results	Generation of knowledge by local stakeholders is facilitated by the researchers; researchers might help local stakeholders in monitoring and evaluating their own experiments/surveys
IV.d) Type, frequency and intensity of interaction	Researchers meet local stakeholders only when they visit the on-farm experimental sites or do interviews, no further contact is established	Researchers and local stakeholders meet informally and irregularly, meetings are limited to logistic or technical aspects of the research	Researchers and local stakeholders meet informally but regularly to discuss the research process and the outcomes	Researchers and local stakeholders meet regularly in formal meetings to discuss the research process and evaluate the outcomes	Researchers and local stakeholders meet frequently in formal meetings to discuss the research process, evaluate outcomes and plan further steps together
IV.e) Investment of resources and payment	Researchers provide all research inputs, rent the experimental plots and pay local stakeholders for their contribution of labor in experiments or surveys	Researchers provide most of the research inputs and pay for larger investments; farmers contribute their plots or animals and receive coverage of risks	Research inputs and investments are shared by local stakeholders and researchers, farmers contribute plots and animals and cover minor risks	Local stakeholders provide most of the research inputs, invest their labor, contribute to larger investments and cover the risks by themselves	Farmers and/or other local stakeholders pay researchers for their help in identifying solutions, they contribute all research inputs (plots, animals)

Table 6. AFAPAR Dimension V. Stakeholders' characteristics

	Score 0.0	Score 0.5	Score 1.0	Score 1.5	Score 2.0
V.a) Stakeholders' experiences of previous projects	Local stakeholders have negative experiences with previous projects	Previous projects did not provide any feedback to the local stakeholders	Previous projects provided feedback but did not deliver interesting results	Positive experiences with previous research projects, projects provided feedback and delivered interesting results to the local stakeholders	Very positive experiences with previous research projects, results helped to find solutions for urgent problems of local stakeholders
V.b) Perception of the research project by local stakeholders	The research project is perceived as irrelevant or even dangerous by the local stakeholders	The research project deals with issues that are not of major concern for the local stakeholders	The research project deals with issues that are of concern for the local stakeholders, but the approach appears too complicated or abstract	The research project is perceived as useful and interesting and deals with problems that are of concern to the farmers	The research project is perceived as extremely relevant for solving pressing problems of the farmers
V.c) Perception of the researchers by local stakeholders	The researchers are perceived as ignorant and/or arrogant outsiders	The researchers are perceived as teachers who instruct people in order to improve their skills and practices	The researchers are perceived as experts who have a strong interest in farmers' problems and respect them	The researchers are perceived as partners in increasing knowledge and in developing solutions	The researchers are perceived as facilitators of a continuous mutual learning process
V.d) Availability of time on the part of local stakeholders	Local stakeholders are concerned with meeting their basic needs and do not have time to involve in the research	Local stakeholders have very limited time availability and can only involve occasionally in research activities	Local stakeholders have only time in certain periods of the year; during this periods they can involve regularly in the activities	Local stakeholders have time throughout the year to regularly involve in most of the research activities	Local stakeholders have sufficient time for a continuous involvement in the research
V.e) Farmers' scope for action	Farmers do not have any scope for changing their agricultural practices or farming systems due to extreme poverty, unfavorable agro-ecological conditions and/or a repressive institutional environment	Farmers have limited scope for action because of subsistence-orientation, scarce resources, relatively unfavorable agro-ecological conditions and a non-supportive institutional environment	Farmers are trying to adapt their practices and strategies to changing agro-ecological conditions and market dynamics, but have scarce resources and/or receive little support from the institutional environment	Farmers have a wide scope for action and can adapt easily to changing agro-ecological and to market dynamics; the institutional environment is well developed and supportive	Farmers are completely free in their agricultural decision-making, have good access to markets and favorable agro-ecological conditions and a very supportive institutional environment

Table 7. AFAPAR Dimension VI. Stakeholders' benefits

	Score 0.0	Score 0.5	Score 1.0	Score 1.5	Score 2.0
VI.a) Technical and institutional innovations, improved practices	The research project does not provide technical or institutional innovations and does not lead to improved practices of the stakeholders	The research project provides turnkey solutions; farmers can observe these solutions on demonstration plots and adopt or reject them	The research project provides turnkey solutions that have been tested under on-farm conditions; farmers can adopt or reject after proper evaluation	The research project provides flexible solutions that farmers can test by themselves and adapt to their own specific situation	The research project provides a range of potential solutions from which the farmers can choose; solutions can be easily adapted and refined
VI.b) Improvement of skills	The research project does not have any effect on the skills of the stakeholders involved	The research project improves the ability of stakeholders to diagnose problems	The research project improves technical or managerial skills of the stakeholders	The research project improves technical, managerial and organizational skills of the stakeholders	The research project improves skills and increases the experimental and/or self-help capacities of the stakeholders
VI.c) Creation of knowledge and awareness	The research project does not raise knowledge and awareness on the side of the stakeholders	The research project increases the knowledge of stakeholders on a specific topic or commodity (no systemic knowledge)	The research project raises knowledge and awareness of causal relationships in agro-ecosystems, markets, or other systems	The research project increases knowledge on the functioning of systems and awareness of the positive and negative effects of farming practices	The research project enables stakeholders to blend their local knowledge with scientific knowledge in a synergetic way
VI.d) Empowerment and self-organization	The research project does not empower local stakeholders and does not improve their capacities for self-organization	The research project has indirect effects on the self-organization of the local stakeholders and/or on local power relations	The research project increases the social capital of the local stakeholders by reducing social conflicts	The research project increases the social capital of the local stakeholders by promoting collective action	The research project increases the social capital of the local stakeholders by political empowerment
VI.e) Improvement of livelihoods	The research project does not contribute to an improvement of local stakeholders' livelihoods	The research project leads to improvements of the livelihoods of the stakeholders directly involved in the research project	The research project leads to improvements of the livelihoods of the stakeholders involved in the research and enhances human capacities within the institutional framework	The research project increases the resilience of local livelihoods and ecosystems to external shocks and the capacity of local stakeholders and institutions to adapt to changing conditions	The research project increases resilience and adaptive capacities of local stakeholders, institutions and ecosystems and has positive off-site effects (e.g., consumer health, improved water quality)

Recent Discussion Papers

No. 01/1999 F. Heidhues and G. Schrieder, *Rural Financial Market Development.*

No. 02/1999 F. Heidhues, C. Karege, B. Schaefer and G. Schrieder, *The Social Dimension of Policy Reforms.*

No. 03/1999 F. Heidhues, W. Erhardt, A. Gronski and G. Schrieder, *The Social Dimension of Reforms and World Bank Case Studies.*

No. 04/1999 W. Erhardt*, Credit for Poor and Low-Income Entrepreneurs in Urban and Rural Northern Thailand.*

No. 05/1999 J. Senahoun, F. Heidhues and D. Deybe, *Structural Adjustment Programs and Soil Erosion: a Bio-Economic Modelling Approach for Northern Benin.*

No. 06/1999 T. Kyi and M. von Oppen, *An Economic Analysis of Technical Efficiency of Rice farmers at Delta region in Myanmar*

No. 07/1999 Schrieder, G., Munz, J., and R. Jehle, *Rural Regional Development in Transition Economies: Country Case Romania*

No. 08/1999 Hartwich, F., and T. Kyi, *Measuring Efficiency in Agricultural Research: Strength and Limitations of Data Envelopment Analysis*

No. 09/1999 Hartwich, F., *Weighting of Agricultural Research Results: Strength and Limitations of the Analytic Hierarchy Process*

No. 01/2000 Neubert, D., *Poverty Alleviation as Intervention in Complex and Dynamic Social Fields*

No. 02/2000 Neef, A., Sangkapitux, C., and K. Kirchmann, *Does Land Tenure Security Enhance Sustainable Land Management? Evidence from Mountainous Regions of Thailand and Vietnam*

No. 03/2000 Breitschopf, B. and G. Schrieder, *The Development of the Rural Nonfarm Sector in Transition Economies – Implications of Capital Intensity on Labor Productivity and Employment.*

No. 04/2000 Erhardt, W., *Urban Bias in Reverse: Have Urban Small Enterprises Been Neglected by Policy Makers and Bankers in Thailand?*

No. 05/2000 Senahoun, J., F. Heidhues and D. Deybe, *Impact of Agricultural Policy and Food Security: An Agricultural Sector Modelling Approach for Benin.*

No. 06/2000 Heidhues, F., *Globalisierung, Einkommensverteilung und ländliche Regional-entwicklung in Entwicklungsländern.*

No. 07/2000 Heidhues, F., *The Future of World, National and Household Food Security.*

No. 08/2000 Buchenrieder, G. (née Schrieder) and I. Theesfeld, *Improving Bankability of Small Farmers in Vietnam.*

No. 09/2000 Dufhues, T.B., *Economic Appraisal of Sugarcane Production in Peasant Households in the Son La Province, Northern Vietnam.*

No. 10/2000 Heuft, A. and G. Buchenrieder (née Schrieder), *Decentralisation in Peru's Agricultural Policy: A Critical Review from 1993 to 1998.*

No. 01/2001 Knüpfer, J., *Landnutzungsentscheidungen ethnischer Minderheiten im Kontext der institutionellen Rahmenbedingungen Nordthailands.*

No. 02/2001 Daude, S., *WTO and Food Security: Strategies for Developing Countries.*

No. 03/2001 Knüpfer, J and G. Buchenrieder, *Rural Poverty Alleviation Through Non-Farm Income in Transition Economies.*

No. 04/2001 Dufhues, T., P.T.M. Dung, H.T. Hanh, and G. Buchenrieder, *Fuzzy Information Policy of the Vietnam Bank for the Poor in Lending to and Targeting of the Poor in Northern Vietnam.*

No. 01/2002 Brüntrup, M. and F. Heidhues, *Subsistence Agriculture in Development: Its Role in Processes of Structural Change.*

No. 02/2002 Alker, D. and F. Heidhues, Farmers' Rights and Intellectual Property Rights – Reconciling Conflicting Concepts.

No. 03/2002 Buchenrieder, G., J. Knüpfer and F. Heidhues, *A Cross-Country Comparison of Non-farm Rural Employment in the Balkans.*

No. 04/2002 Knüpfer, J., S. Xhema und G. Buchenrieder, *Armutsreduzierung durch Einkommensdiversifizierung – Eine Studie im ländlichen Kosovo.*

No. 01/2003 Dufhues, T., G. Buchenrieder, F. Heidhues and Pham Thi My Dung, *Towards Demand-Driven Financial Services in Northern Vietnam: A Participatory Analysis of Customer Preferences.*

No. 02/2003 Geppert, M. and T. Dufhues, *Visualizing Rural Financial Market Research in Northern Vietnam through Pictures.*

No. 01/2004 Nguyen Manh Hai and F. Heidhues, *Comparative Advantage of Vietnam's Rice Sector under Different Liberalisation Scenarios – A Policy Analysis Matrix (PAM) study.*

No. 02/2004 Breisinger, C and F. Heidhues, *Regional Development Perspectives in Vietnam – Insights from a 2002 Provincial Social Accounting Matrix (SAM).*

No. 03/2004 Basu, A.K. and M. Qaim, *On the Distribution and Adoption of Genetically Modified Seeds in Developing Countries.*

No. 04/2004 Fischer, I., *Media Supported Communication in Agricultural Extension and Participatory Rural Development in Northern Thailand.*

No. 05/2004 Dufhues, T., U. Lemke and I. Fischer, *Constraints and Potentials of Livestock Insurance Schemes – A Case Study from Vietnam*

No. 06/2004 Neef, A. and D. Neubert*, Assessing Participation in Agricultural Research Projects: An Analytical Framework*