

From information giving to mutual scenario definition: Stakeholder participation towards Sustainable Rubber Cultivation in Xishuangbanna, Southwest China

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Abstract: Rubber farmers in Xishuangbanna Dai Autonomous Prefecture, Southwest China, which is part of the “Indo-Burma biodiversity hotspot”, have experienced a massive increase of their income through the introduction and intensification of monoculture rubber (*Hevea brasiliensis*) plantations. This robust economic growth is coupled with dramatic losses of ecosystem functions and services during recent decades. Only recently a call for “sustainable rubber cultivation management” has been spread. The Sino-German project “SURUMER: Sustainable rubber cultivation in the Mekong region” is looking for an integrative, applicable, and stakeholder-validated concept for sustainable rubber cultivation. Aiming at solving problems of the complex rubber-dominated land use situation in Xishuangbanna region, a practice-tested methodology is developed for enhancing collaborative learning within the project and beyond, of practitioners, scientists from different disciplines and other stakeholders.

The objective of this paper is to present the concept on stakeholder involvement of SURUMER – an iteration of discourse instruments and communication measures –, as well as its stepwise development after internal and external evaluations. Preliminary results with respect to their strengths and weaknesses are discussed as well as the consequences for further process adjustment – including potential and limitations under the specific working conditions.

Three key stakeholder groups have been identified so far, namely innovative rubber farmers (often the village heads), regional decision-makers (prefecture administration and rubber companies), and provincial politicians.

In the first project phase, methods of participation tended to be more passive, such as information on the project (exhibition, newsletter), informal talks, workshops and village meetings. Qualitative empirical communication research has been conducted including a baseline stakeholder analysis and an in-depth analysis of stakeholders’ problem perception, their interests (goal conflicts and synergies), and their formal and informal communication networks.

In the future, more active participation is intended; a transdisciplinary research setting which supports co-learning processes. One of its main elements is participatory scenario development including discussions of the economic and ecologic trade-offs of land use different strategies – its operationalization under Chinese conditions a Sino-German research consortium being a challenge to process management.

Keywords: stakeholder involvement, transdisciplinarity, sustainable rubber cultivation, communication, China, Xishuangbanna, action research

Introduction

In many regions of the Greater Mekong Subregion production of natural latex became the utmost important driving factor for rural development. In Xishuangbanna prefecture, Southwest China, the rapid expansion and intensification of rubber (*Hevea brasiliensis*) cultivation in recent decades is coupled with dramatic losses of ecosystem functions and services (Tang et al. 2010). The unbalanced development of economy and ecology has raised a strong call for more sustainable development through the “greening” of rubber plantations (Zhang et al. 2007).

The Sino-German project “SURUMER: Sustainable rubber cultivation in the Mekong region” is funded by the German Federal Ministry of Education and Research (BMBF) under the Sustainable Land Management program (SLM); it intends to develop *an integrative, applicable, and stakeholder-validated concept for sustainable rubber cultivation*, which can provide a wider application across the Mekong region (SURUMER 2011). SURUMER consists of nine German-Chinese research subprojects on both ecological (e.g. soil, water, biodiversity) and socio-economic (e.g. contingent valuation, farmers’ livelihood) themes. Changes in ecosystem services and functions by rubber cultivation are assessed and quantified, consequences are modelled, trade-offs and synergies are discussed, and finally scientific concepts should be implemented, i.e. transferred into practical land use.

The objective of this paper is to present the methodology for stakeholder involvement of SURUMER, including the stepwise adjustments in approach resulting from internal and external evaluations. Preliminary results with respect to their strengths and weaknesses are discussed as well as the consequences for further process adjustment - namely a strong focus on joint scenario development - including potential and limitations under the specific working conditions.

Stakeholder involvement in SURUMER

General considerations towards stakeholder participation

Transdisciplinary research is or should be motivated by the desire to implement solutions to complex real-life problems (Klein et al. 2001, Aenis 2010). This kind of knowledge production (*mode-2*, Gibbons et al. 1994) is furthermore characterized by a knowledge transfer between research and praxis and consequently the involvement of various stakeholders in the research process. Basically, *stakeholders* are individuals, groups or organizations that can affect or are (positively or negatively) affected by a decision or action (Grimble et al. 1995; Bryson et al. 2011). With respect to a specific organization such as a research consortium, stakeholders are defined as “any group or individual who can affect or is affected by the achievement of the organization's objectives” (Freeman 1994). They ultimately determine whether a project is a success or failure (Jergeras et al. 2000).

The question arises whether researchers are stakeholders or not. In our opinion this depends on the “decision” itself. From the perspective of a research project this is quite obvious because the researchers certainly are affected by decisions and are also those who influence decisions strongly. This is also the case for researchers external to the consortium, particularly those who conduct similar research in the region. Whether researchers are stakeholders with respect to local or regional decision-making and therefore influence regional development processes, is less clear in China. This depends a lot on the relationship which is or will be established with practitioners who have influence on a certain decision.

The main focus of this paper is involvement of practitioners, in this case those persons who can either be directly involved in the SURUMER project as so-called practice-partners or as external decision-makers and persons affected by rubber cultivation. Generally in SURUMER, stakeholders are those who can affect or can be affected by the “sustainable rubber cultivation” concept

and its implementation, including multipliers, intermediaries, users or implementers of project results, cooperating organizations, and institutions or decision-makers with authority (and mandates) for the projects' implementation-oriented targets.

Participation is seen as an “interactive process which enables all participants to formulate their interests and objectives within a dialogue, which leads to coordinated decisions and activities as far as possible” (AGILNP 1995, translated). There are different forms of participation in decision-making, from passive forms of participation such as through information sharing and consultation. The highest levels of participation in this continuum are collaborations which involve a high level of ownership on the part of participants. Co-action of participants or “self-mobilization” occurs when external stakeholders drive the processes themselves and take the initiative to ask researchers to participate (Arnstein 1969, Pretty et al. 1995). What is obvious is that the more one includes participatory processes in research, the more resources must be spent. This then leads to a situation where restricted resources function as a constraint. For example, researchers such as Kanji & Greenwood explain “full participation is not always feasible or desirable” (2001:33) whereby it might be better to find optimal forms of participation which take into consideration “issues of representation and legitimacy”.

A highly flexible and situation-specific approach has been chosen in Xishuangbanna including an exercise to identify key stakeholders of rubber cultivation because external stakeholders, the real decision-making structures, stakeholders' interests concerning sustainable rubber cultivation, and their willingness to participate were unknown. The research methodology included steps to find optimal forms of participation where stakeholders were encouraged to express how and in which form they are involved or want to involve themselves.

The concept

The overall research process has been structured along three main phases with different objectives and forms of research (SURUMER 2011). During the first phase of research spanning approximately three years, ecosystem functions and services are assessed and quantified as far as possible. This phase of situational analysis has a clear multidisciplinary focus amongst researchers in the subprojects with an exchange within the consortium. In phase two, research will be more interdisciplinary with an integration of findings into new land use concepts – using modeling approaches which use assessment indicators to define impacts as well as to identify trade-offs and synergies of different options. During this phase trials will be established on plot level. In the last phase (2015-2016), the focus will shift towards application of scientific concepts for practical land use and associated policies. This will demand for a concept valuation by the users (farmers, politicians, administration, planners etc.) and therefore over time becomes more and more transdisciplinary.

The possibility for implementation will be the higher the more “realistic” the concepts are and the better they are communicated with stakeholders. This was the reason for establishing an ongoing discourse with key-actors who can influence implementation as early as possible. The main function of the stakeholder discourse is seen as a means of identifying knowledge demands, looping-back research results as well as offering an opportunity for mutual feedback between researchers and stakeholders. It therefore has an external and an inner-consortium focus which are both subject to process management (Aenis & Nagel 2004).

For stakeholder involvement, a pragmatic communication approach has been chosen which, on the one hand consists of a range of discourse instruments and on the other hand facilitates empirical social research with the stakeholders themselves; both would be further developed during the process. Table 1 gives an overview of the instruments.

In order to establish trustful communication between researchers and practitioners, it is necessary to develop adequate instruments and platforms for information which also enable participants to understand the project. One particular objective was to jointly develop a training unit.

Table 1: Instruments of stakeholder involvement

Discourses	Empirical research
<ul style="list-style-type: none"> • Inner-consortium discussions • Bilingual information material • Informal talks with key actors • Series of workshops & meetings with stakeholders • Development of a training unit 	<ul style="list-style-type: none"> • Stakeholder analysis • “Baseline study” • In-depth analysis concerning issues defined during discourse • Knowledge system analysis
<ul style="list-style-type: none"> • Process facilitation & Observation → adjustment and methodology development 	

The main objective of empirical research is a systematic stakeholder analysis: to identify relevant stakeholders according to pre-defined criteria (which are communicated with the consortium) and to create knowledge about the stakeholders, their role and power (specifically regarding their influence on decision processes related to rubber cultivation), their perspective on the problem situation, their ideas about possible solutions, their interests (including hidden agendas), future perspectives, and, most importantly, local and formal knowledge systems. These knowledge systems include various ways how knowledge is produced and ultimately which knowledge is generated, disseminated and used.

Both approaches are interlinked: Interim results of the empirical research (e.g. goals) are fed back into the discourse and, in turn, transfer concepts as a result. The entire process and its management are documented, observed and analyzed in order to a) further develop the instruments and focus the studies and b) develop a transferable methodology. This iterative approach can be characterized as action-research on a meta level (Aenis & Nagel 2004).

Preliminary results after two years

At the beginning of the project, it was not very clear within the consortium, neither what a stakeholder is or who the stakeholders are or how to involve them. Insofar there was need to establish an **Inner-consortium discourse** within the group of scientists and to jointly develop the concept of stakeholders and their involvement. It took several personal discussions, a workshop on the concept of stakeholders, a plenary meeting and strong intervention by external evaluators (the SLM program foresees an on-site evaluation mission after one year), to convince partners of the importance of communication with stakeholders. Two main aspects have been decided as the main criteria for analysis, namely a) the identification of pressure groups and their representatives and specifically identifying their interests concerning rubber, in improving the system, and in conservation of non-rubber-areas, and b) their potential to implement new concepts, i.e., their influence on the implementation of new land-use recommendations, and particularly the SURUMER concepts in the field (directly & indirectly). SURUMER has initiated discourses with three stakeholder groups who have decision-making power at three different administrative levels: 1) farmers are those who decide how to cultivate their land even if there are strong pressures on what, and insofar as they will or will not implement land use measures developed in the frame of SURUMER; 2) regional administration that influences land use planning and local policies, and 3) provincial and national politicians who have influence on the broader policy framework.

A “baseline” **stakeholder analysis** (Aenis et al. 2014) has been carried out in eight villages. The results are fruitful - it has corrected pre-existing ideas from the researcher’s consortium such as negating the assumption that farmers do not know about side effects of rubber plantation, and it revealed that although farmers recognize the negative environmental and ecological effects of

rubber cultivation, that income generation remains their priority leading to further intensification of rubber production in the absence of other income generating alternatives. This baseline stakeholder analysis also revealed that many farmers are aware of the risks of monoculture, and as a result there are already some alternatives practiced such as intercropping. Furthermore this analysis has brought some insights into communication networks and particularly the strong role of village heads and innovator farmers in the development process. Village heads are opinion leaders and are often those who test or bring innovations such as hybrid rice to the region (Tang 2013). On the one hand, this is because the village heads are strongly linked to networks within and beyond the region and on the other hand, those who have a wider perspective and try out new things often later become village heads.

A range of **information material** has been produced, including a website in German, English and most importantly, Chinese, which contains general information on the project, a leaflet with basic information of SURUMER, a small poster exhibition of 12 posters illustrating each subproject, and a brochure as supplement for the posters to be handed out to stakeholders during various events. The main result of internal discussions and also a reaction on stakeholder feedback seems trivial but costs a lot of human labor in praxis: The consensus is that all the information will principally be given both in English and Chinese languages. Information materials, particularly the exhibition were well recognized during the following workshop and the local partner (Naban River Watershed National Nature Reserve Bureau) uses the material for example in their information center. The process of producing the posters caused many discussions within the consortium, and insofar the function of such material, if jointly developed, is not only to present and inform stakeholders but also to deepen understanding and communication among research partners.

So far, four regional **workshops and meetings** have been held as communication platforms with participants from government bureaus, enterprises, local research institutes, and villages. The workshops obviously strengthened the basic understanding between SURUMER and external stakeholders and vice versa, and also had the effects of improved linkages between the actors themselves: during the workshop, participants exchanged each other's activities in rubber cultivation and established a more in-depth contact among each other. Even if the feedback of stakeholders was quite positive in general, they were also critical of their role as information sources and demanded more detailed presentation of results. At the second regional workshop, a smaller number of stakeholders participated which could be partly traced to organizational issues (rural area, end-of-the-year duties of bureaus), and partly to the content of the program.

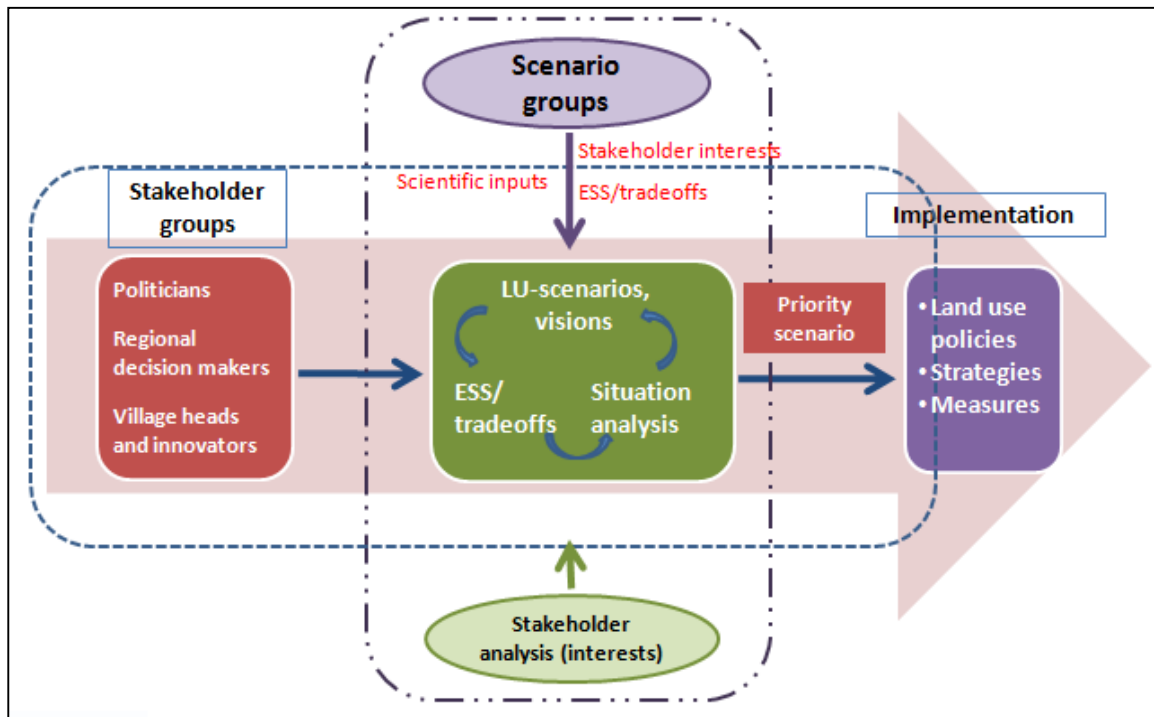
Adjustments

The main adjustments are related to the shaping and widening of the stakeholder discourses. An external evaluation has observed weaknesses in the internal communication of the stakeholder concept, in interdisciplinary and transdisciplinary integration, and emphasized the need for further activities to identify and recruit decision-makers.

Not all of the above mentioned key stakeholders could be involved as of yet. Particularly difficult to contact, are politicians from Yunnan province who are fundamental for implementation of policies. This might be due to their low prioritization of the issue of rubber production. Although rubber cultivation is economically stable, it is only relevant to a relatively small region inhabited by a minority, and due to a long-lasting drought in the Yunnan mainland there is a much bigger policy-relevant problem for "normal" forests. Nevertheless major efforts will be taken to involve those actors.

To improve integration, our research team decided to focus on both – modeling approaches and stakeholder discourses on scenario development (Figure 1).

Figure 1: Stakeholder discourses in SURUMER and their interlinkages with interdisciplinary research



For this purpose, two interdisciplinary groups have been founded, one on scenario definition and one on integrated modeling. The discourses with stakeholder groups are focused on a joint situation analysis, discussion on the future of rubber, and discussion of ecosystem services and functions (and particularly trade-offs between the different functions). A priority scenario will be developed mutually and consequences concerning local policies, cultivation measures and e.g. market strategies will be discussed; in other words - the implementation of the SURUMER strategies. Participatory scenario development (cf. Reed et al., 2013) insofar is the main linking pin between external stakeholders and SURUMER.

This is an on-going process of personal (talks and more formal interviews) and group communication (workshops and meetings) which requires continuous inputs from the research consortium and stakeholder groups. Communication within these groups differs: whereby in the researchers' group scenarios are discussed formally (using "modeling language") the discussion with practitioners focuses on problem analysis, objectives of different interest groups and "possible futures" of rubber cultivation in the region. Wherever possible, researchers participate in praxis groups and vice versa - even if this is restricted due to language problems and different locations (in Germany and China).

The approach is particularly challenging for process management as neither of the participants have experience with this approach, stakeholders' time is restricted and the framework conditions in China are not really supporting participation. It is obvious that a main task is translation in a very broad sense: Research results, approaches and later the scenarios themselves must be translated from Chinese into English and from scientific into practical language and vice versa. Scenarios of modeling consist of limited variables whereby the discussions amongst practitioners tend to either be more complex (rubber cultivation is only one aspect) or focused on a specific topic such as water quality. Translation hereby is needed to identify meanings to be used for the scenario modeling.

Discussion

Information, information, information

After all the measures described above and presentation of the consortium and the approaches of the subprojects given in a workshop, stakeholders stated that they have a basic overview but still do not completely understand the project. In one workshop, participants furthermore claimed that there was too much one-sided information flow from them to the researchers. They strongly recommended more detailed information, on the SURUMER process, particularly on subprojects' results, and on sustainable ways to manage rubber cultivation. Furthermore, practitioners expressed that they would like to receive trainings about basic cultivation issues ("how to use pesticides and herbicides"), and they have a strong willingness to see demonstrations with possible alternatives such as intercropping options from SURUMER.

Information giving from SURUMER therefore is one form of "passive" participation which should even be intensified. Obviously it is not possible in a one-day workshop to give an overview on the overall consortium, to discuss scenarios and go into detail too. On the other hand stakeholders do not have the resources to meet more than twice a year. The consequence is to develop a mix of instruments: Actively spread general information by regular newsletters and the webpages, intensify bilateral interaction with key players concerning the scenarios, and to discuss concrete findings of subprojects and scenario issues during the workshops. For the farmers, a training on Integrated Pest management will be organized in which aspects of SURUMER such as intercropping will be integrated.

The rocky road towards stakeholder-driven co-learning processes

There is evidence that the concept of stakeholder involvement and discourse is improving and communication flows have been strengthened. Internally, there still seem to be strong forces against too much interaction with external actors. Scientists' interests are much more in research than in communication. Some partners are still not convinced that they have to personally communicate with stakeholders. However, it is the project management's concern to encourage active forms of participation and establish co-learning processes. To invest time and resources to build up trust and establish an open working climate, and to encourage stakeholders to be more and more active vis-à-vis the consortium so that the external stakeholder can take the leading role as much as possible. Such improvement seems to be gradual rather than a revolutionary process and therefore needs long lasting interventions.

One of its main elements is participatory scenario development which is – at least in this region – a new approach to actively engage stakeholders. It is very clear that they do have ideas about possible future scenarios of rubber cultivation, and some already have ideas such as alternative plants and intercropping (Aenis et al. 2014). We are hopeful that together with the SURUMER researcher group, the joint scenario development could be an effective way to enable stakeholder involvement, and together we can reach the common goal of a sustainable strategy which is on its way towards implementation.

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