STOCKHOLM ENVIRONMENT INSTITUTE

Mangrove ecosystems, communities and conflict: developing knowledge-based approaches to reconcile multiple demands

Institutional Analysis

WP5&8 Draft outline

Document in progress

Background

The EU Sixth Framework Program MANGROVE project began in 2005 and will run until 2009. The program is a joint collaboration among seven partner organizations from six countries. The project aims to improve understanding of mangrove ecosystems, communities and conflicts to develop knowledge-based approaches to reconcile the multiple demands on mangroves and adjacent coastal zones in Southeast Asia.

This report is a description of WP5&8.
WP5&8 is led by the Stockholm Environment Institute and implemented jointly with the partners in the project.

The consortium members who participated were:

- Mulawarman University
- Kasetsart University
- Mangrove Ecosystem Research Division, Vietnam National University
- Wageningen University
- STREAM Initiative, Network of Aquaculture Centres in Asia-Pacific and
- Centre for Environment and Society, University of Essex.
- Stockholm Environment Institute

Workpackage 5&8 objectives and starting point

Managing coastal resources involves understanding of complex systems containing both human and natural components. To manage these systems, institutions with divergent interests and expertise are called upon to work together. In Southeast Asia pressures on the coastal area is characterized by an increasing intensification of shrimp farms, expansion of aquaculture and conflicting interest in the management of coastal resources. In recent years impact of natural hazards has increased the vulnerability of coastal communities.

In this report, we outline the approach for WP5&8 and explain the key elements of soft system theory used in WP5&8. Soft systems analysis includes explicit consideration of two important aspects of institutions. In the case of the Mangrove project it begins with a description of the people and groups linked with mangrove ecosystems in the three sites. This analysis is to be complemented by ongoing analyses of the roles and values of individual stakeholders and the power dynamics among stakeholders (Checkland and Scholes 1990).

This document should be seen as a work in progress and will be revised and developed during the course of the project.

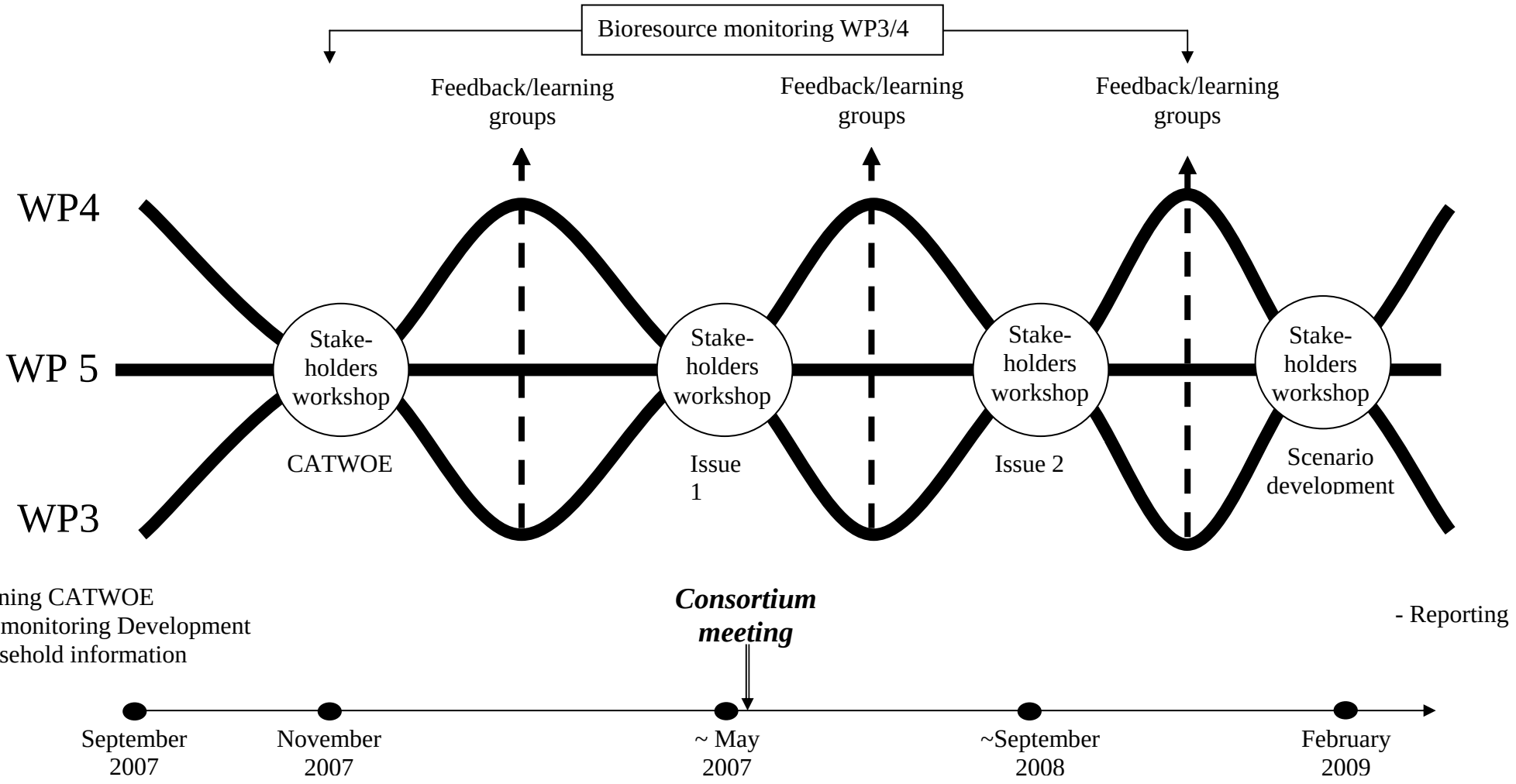
The goals of WP5&8 are to complete an institutional assessment and policy study and report on the outcomes, including an assessment of opportunities to reconcile conflicts/tensions by stimulating dialogue among the various disciplines involved in the management of mangrove ecosystems; report on multiple uses and users of mangroves and trajectories of change; engage stakeholders in valuing functions, goods and services from mangroves and explore opportunities for reconciling differences between different users and uses; develop Action Plans to reconcile multiple uses of mangrove, including consideration of ecosystem and

livelihoods aspects (**WP3**&**4**), and refine these in consultation with stakeholders, in particular civil society and local community and government representatives.

In the interest of describing the process of WP5&8 in greater depth, we have included a section on the theoretical framework describing the soft system theory and a section on CATWOE a tool used in soft system theory and applied as part of WP5&8 in the three countries.

The implementation of WP5&8 is depicted in Figure 1. The process includes a series of workshops. Understanding and findings emerging from the workshops will support the adaptation of the CATWOEs. The first CATWOE in each case represents the perspectives of the respective research teams inthe three case countries. This draft CATWOE is being used as a basis to facilitate stakeholder workshop 1. The stakeholder workshop will allow the stakeholders identified by the research team (clients, actors and owners) to discuss the issue identified and provide comments on the transformation to allow the research team to adjust the work approach/ plan accordingly. It will also provide a better insight into the relationship between different actors linked with mangrove ecosystems to gain insight into the role of mangroves and how it differs between different stakeholders for the overall purpose of reconciling multiple demands. The outcome of the first stakeholder workshop will provide the research teams with new insights which will be reflected in an adapted CATWOE (see CATWOE based on the first Stakeholder Workshop in Vietnam). There are no prescribed ways of organizing the workshops. In Vietnam the first stakeholder workshop provided insights into the role of different stakeholders and the power relation between different stakeholders. This enabled the research team rethink both the theme and plan for the second workshop.. The project has planned three stakeholder workshops in the three countries, reprsented and as new iteration of CATWOE. These platforms supporting stakeholder interaction will contribute to a better understanding of the conflict interests between different stakeholders and how they can be reconciled. The outcomes of the stakeholder workshops will also feed research questions and insights to both WP3&4.The final stakeholder workshop will build the activities undertaken as part of all the WPs and present a set of scenarios to reconcile the multiple demands linked with the mangrove ecosystems in the three sites. In the project document this is referred to as an action plan. As part of WP8 the institutional analysis will emphasis on working with the actors and institutions in the three countries that has the mandate to address the challenges behind multiple demands of mangrove ecosystems. The outcome of will be determined by the political will in the three countries to ensure any kind of change.

Graphical representation of the timing and linkages between workpackages in the MANGROVE project



The process

The description of the process below builds mostly on concrete insights from the Tien Hai case in Vietnam, but it is assumed that a similar process can be undertaken in cases from Indonesia and Thailand.

The chosen cases in the Mangrove are situated with contexts in which the historical legacy is characterized by conflicting interests in terms of the management, governance and use of coastal resources. Situated within all cases are Mangroves which serve as arenas for discord but also in some cases reconciliation. The MANGROVE project is about providing insights, tools, approaches and theory into operationalising mangroves in these contexts as important means for fostering the reconciliation.

Using Mangroves as an arena for the reconciliation of competing interests in coastal contexts connects with their operationalisation as a social technical object or what is sometimes referred to as an intermediary object. A socio-technical object is an object, such as a mangroves, forest, data from water monitoring stations, system innovations, etc., which serve to define who the stakeholders are, and is in turn defined as an object by the stakeholder perceptions and actions. Socio-technical objects, deployed in concert with carefully facilitated process design, enable stakeholders/parties to develop a platform where (1) co-learning is possible which is grounded in practice or action, and (2) different interests can contest, deconstruct earlier, and reconstruct new common visions and plans (Powell and Toderi 2003).

In the series of stakeholder workshops and learning groups (see figure1) proposed as part of the MANGROVE project stakeholders will be provided platform to critical reflect upon the management, governance and use of coastal resources from both the stakeholder and the researcher's perspective. They will be able develop, contest, deconstruct earlier, reconstruct new common visions and plans through a phase of scenario development. In short the MANGROVE will support a strategic action planning process.

The legacy of researcher interaction in the case contexts has been focussed on defining Mangroves as a hard system and thereby focussing primarily upon situations in which the normative assumption is that Mangroves should be restored and re/planted in these systems. Underlying this research approach has been the bio-monitoring of the ecological services derived from the change in bio-physical status of Mangroves. With the inception of MANGROVE, researchers added a new layer to their research perspective, mangroves and the inter-connections to local livelihoods (see figure?)

With the addition of this layer it has been necessary to re-think the hard boundary around the Mangrove systems and see mangroves rather as a soft system with stakeholder determined boundaries. Given stakeholder often multiple and often diverging interests in mangroves. In acknowledgment viewing the system as "soft" our role as researchers has shifted from predetermining the boundary circumscribing the Mangrove system, describing the systemic problems and identifying the solutions, to becoming stakeholding facilitators. In this sense we see the boundaries, the issues and solutions to be an emerging property of stakeholder interactions. Our role as researchers are reponsible for both contributing expert knowledge connected to our

stake in system and facilitators that enable co-construction of issues, boundaries and solutions developed emerging from the learning supported reconcilation of stakeholder interests in the system.

Post workshop, and on the basis of a critical review of the first iteration of CATWOE in Tien Hai, it is clear that underlying the restoration and replanting of Mangroves in Tien Hai, are serious conflicts of interest. An indepth analysis of these conflicts of interest can be found in the working paper connected to stakeholder workshop 1 in Vietnam. Preliminery insights from a institutional and policy analysis suggest a trend intensified promotion of mangrove replanting and restoration in Vietnam. Contextualising this trend within Tien Hai, and based on the outcomes of stakeholder workshop 1, a pragmatic course for MANGROVE would be to: make the replanting and restoration activities more efficient by situating it within a strategic action planning process. A strategic action planning process in this case would be defined as platform by which the restoration and replanting activity could, be shaped and managed on through the reconcilation of the multiple interests (represented different livelihood regimes) in the system. The reconcilation at the local scale would include planning issues such as site selection for replanting and restoration, species compostion of restored/replanted forests, user rights to restored and replanted mangroves and mangement regimes of restored and replanted mangroves. The reconcilation at an institutional and policy scale would include for example, that the approriate mechanisms were in place to ensure that user rights were upheld and management regimes were feasible and efficient.

Growing out of this process, preliminery recommendations for the Tien Hai site would be to proceed with research that supports the identification of appropriate sites for replanting/restoration and identification of appropriate composits of species. This identification should be undertaken in such a way that it is outcome a reconciliation of (1) the environmental services promoted by the researchers (2) the livelihood interests promoted by both local people and different levels of governance (kommun, district and provincial) and (3) the reduction of climate change intensified hazards promoted nationally. This research would be nested in additional stakeholder workshops faciliated by using research outcomes (socio-technical objects) to facilitate stakeholder dialogues connected to these issues.

Underlying the reconciliation of the above issues through the research process will be an integrated analysis of the systems of user rights and management regimes required to ensure that the restoration and replanting process is both efficient and sustainable in the long term. Reconcilation connected to this will also be supported through issue based CATWOES mediated through stakeholder meetings. Most important in this regard will be the final stakeholder workshop in which a number of different scenarios pertaining to site selection, species composition, user rights and management regimes will deliberated over.

Soft systems

Soft systems methodology (SSM) is an approach to solving complex unstructured human problem situations based on holistic analysis and systems thinking. SSM is a participatory methodology that helps different stakeholders to understand each other's perspectives. It focuses on creating the human activity systems and human relationships needed for an organisation or group to achieve a common purpose.

Systems thinking is a transdisciplinary field that has emerged in response to the limitations of a reductionist and narrowly technical approach to solving problems. SSM was developed during the 1980s as large organisations realised that top-down and highly mechanical approaches to organisational management were not working in a rapidly changing environment.

The SSM starting point is that if people participate in the process of finding out about the problem situation and learning about ways to improve it, then they are more likely to understand the improvements being suggested, feel ownership of them and be committed to change.

The methodology is based on clarifying an unstructured or messy problem situation through designing ideal or conceptual human activity systems that would help improve the situation. These conceptual models are then compared with the problem situation in order to identify desirable and feasible change. The methodology integrates thinking about the logic of how to improve a situation with what is socially and politically feasible.

Adopting an SSM approach involves recognition that the process of analysis (human interaction) is as important as precision in the data and outcomes. Following and experiencing an SSM approach will itself affect change. The participants change, the researchers perceptions may change. This arises because of the very process of exploring views about the problem and possible solutions. (SSM may frustrate directive, task-oriented people as it may be that specific goals are never reached!)

In principle, an SSM project is managed by participants with a facilitator. It covers:

- examination of the problem situation
- analysis of the ingredients (using a rich picture method)
- coming to a root definition of significant facets of the system of interest
- conceptualisation and modelling
- comparison of concept/ideal to actual
- definition and selection of options
- design of action programme
- implementation

A Conceptual frame for MANGROVE?

The context is explored via situation analyses
To identify, invite and engage
Stakeholders
To engage collaboratively in
Learning Processes and better Understanding
With the aid of
Facilitation, tools and methods
and the formation of appropriate
Institutional Support (and or platforms)
In the context of
Enabling Policies
Lead to the emergence of
Desirable Practices and Programmes

With the mechanisms to ensure this is an
Iterative Process

Problem Expression

Stating what the problem is requires situational and problem analysis - comprehending the problem domain of interest. What exactly the problem is will not be known until this analysis is done. A key feature of SSM is to

keep the project vague and wide for as long as possible - don't jump to conclusions nor assume or ignore the current situation e.g. by concentrating on idealised futures.

The analysis may involve the use of many techniques such as checklists of things to look for, question sets, models and frameworks of examination. It is important not to become fixed on the use of one technique or analytical approach only. Typically brainstorming techniques, SWOT, STEEPLE and force-field analysis may be used.

Root Definition

A root definition for which there is a consensus - at a point in time - is an important outcome of the SSM process. The analyst-researchers now need to define **the arena of concern** more precisely i.e to synthesis the "root definition". They move towards a well-defined statement about the area of concern, its activities and components. This may represent a minimum that can be agreed in terms of the real activity domain. People should be able to see what they are agreeing to and what has been left out. It is for internal, creative use not public dissemination.

A root definition defines both what is agreed **and** what is still unresolved plus associated things.

Agree on Changes

If the current system is imperfect (why we did the analysis) - then we have to agree on desirable changes. These presumably may move us towards the ideal.

- retrace our footsteps and go over our synthesis
- reevaluate the insight gained from each stage
- examine how proposals may affect and be received by stakeholders.
- in what way will changes for which there is no consensus/agreement result in problems?

The outcome is that there is some agreement - permission to move.

Action/Implementation

Outcome may not be predictable. Implementation is a new human activity. It means new compromises. If the root definition and option analysis is still fuzzy and if there is no ownership by those who hold the reins of power (the decision-makers) then the SSM process could go into an infinite loop and start the whole thing over again - rue the day!

The final outcome will not completely match the planned change. It will be interesting to see how close they are.

Does an SSM project ever finish .... it doesn't need to as it embodies learning - the human learning and adaptation philosophy. There may be convergence. Issues debated early on may dissipate. Implementation discussions may focus more on participant confidence, ability and understanding of the enterprise.

Criticisms of SSM

- It is not a "how to build a system guidebook". It is heuristic not algorithmic.
- There is no real method. But then many other, more prescriptive "methodologies" don't work. SSM does encourage commitment and it provides a forum to bring diverse interests together.
- The open endedness makes it difficult to manage. An SSM project is unlikely to be a complete success or a failure but it should reflect a natural, evolutionary approach.
- SSM can too easily ignore environmental and structural determinants and questions of power. Organisational members do not have equal choice and it is naive to think that everyone can openly discuss problems, perceptions and needs. Yet open, willing and supported discussion is more likely to open up organisation culture - encouraging learning and joint problem solving.
- Openness and togetherness are implicit and explicit values of SSM .... not easy values in a confused, conflict and contradiction-oriented or power-centred organisation.

Further Links on SSM

- http://www.sfc.keio.ac.jp/~masanao/Mosaic_data/ssm.html
- Resource papers in Action Research - Bob Dick and Pam Swepson
- Dr. Quan C. Dang: Modelling Business through Soft Systems Methodology
- Softs Systems Methodology in the World Wide Web
- Google search on "soft systems methodology"

Reading

- Smyth, D.S., Checkland, P.B. (1976). Using a Systems Approach: The Structure of Root
  Definitions. J. Appl. Sys. Anal. 1:75-83. (see
  www.isss.org/2000meet/papers/20088.pdf)
- Soft systems methodology in action / Peter Checkland, Jim Scholes.
- Systems thinking, systems practice / Peter Checkland.
- Checkland P, Howell S, 1998, Information, systems and information systems : making sense of the field, Wiley
- Patching D, 1990, Practical soft systems analysis, Pitman

CATWOE

In the 1960s Peter Checkland, a Systems Professor, developed a problem-solving methodology called Soft Systems Methodology (SSM), which sought to apply the systems principles of engineering to business problems. As part of this, Checkland recommended that before you define your problem, you first identify all of the parties involved. By looking at how people and systems interact to affect the situation, you can more easily identify the key problems to solve.

He used the mnemonic CATWOE as a checklist for the people and elements that contribute to a change.

By focusing on one specific problem, you tend to stop looking for other problems. And that's when you risk missing something that's potentially more fundamental than the problem you first decided to investigate. This is where CATWOE can help you avoid making a serious mistake.

CATWOE Training workshop

The Stockholm Environment Institute organized a training workshop in September 07 The workshop was conducted as a video training exercise for the partners in the EU Mangroves project to learn about soft system theory, and provide training on the CATWOE approach. The CATWOE approach was introduced at the consortium meeting held in Hanoi in July 2007, during which it was agreed that the partners would explore and learn more about the CATWOE and how it can be used in the Mangrove project as a tool to building on the outcomes from WP1-8.

CATWOE is a tool that can guide the work under MANGROVE project forward to better understand the complex nature of the various actors and structures that directly of indirectly impact the work the project is outlines to address.

CATWOE Analysis

Part of "problem expression" is identifying the situational elements and parties involved. Checkland uses the mnemonic CATWOE to describe the human activity and situation. What is CATWOE?

- **Customers** - (the victims or beneficiaries of transformation
- **Actors** - the players (individuals, groups, institutions and agencies), who perform the transformation
- **Transformations –**the conversion of input to output. What are the transformations that generate a change? How are they achieved? How well are they performing?
- **Weltanschauung or world-view** - what is going on in the wider world that is influencing and shaping the "situation" and need for the system to adapt? Ie what makes this transformation meaningful in context
- **Owners** – those who could stop the transformation

- **Environment** - the trends, events and demands of the political, legal, economic, social, demographic, technological, ethical, competitive, natural environments provide the context for the situation and specific problem arena.

NB: Actors, clients, owners etc may overlap.

CATWOE analysis helps in working out a "root definition" and expressing the domain of the problem. Avoid early conclusions about who and what is "important".

Transformation Example

Checkland offers the case of an aircraft landing system where

- (transformation) the incoming aircraft approaches from a height and a distance. The goal is safe landing on the runway.
- The actors are the pilots (human and auto), the clients - the passengers, crew, air traffic controllers, ground staff and people living under the runway,
- the owners include the airline owners and their agents (the managers)
- the environment: air lanes, traffic conditions and geographic features, regulation of landing and take-off slots at the airport, competition from other airports.
- The weltanschauung may involve the rise in passenger traffic, competition between international airports, the airport-housing environment, high concern for safety and high technology operations.

The Process View

Using CATWOE in analysis discussions and drawing a rich picture encourages a process approach. Participants can test assertions, assumptions, positions and the integrity of data/information.

SSM targets existing systems. The focus is on investigation and definition of the existing features of the project and how these interact externally and internally with the system as a whole (hence "holism") and sub-processes. After problem examination and definition, SSM participants "should" be able to "see" the project

- differently and more fully
- differentiate levels and sub-problems of the whole.
- They will have researched "facts", positions and viewpoints at varying levels of detail
- They will have articulated many "problem" statements, some major and some trivial.
- They will have debated the evaluated assumptions about the trivial and the major

A significant outcome of the workshop was the draft CATWOES for the three countries.

CATWOE in Vietnam

Background

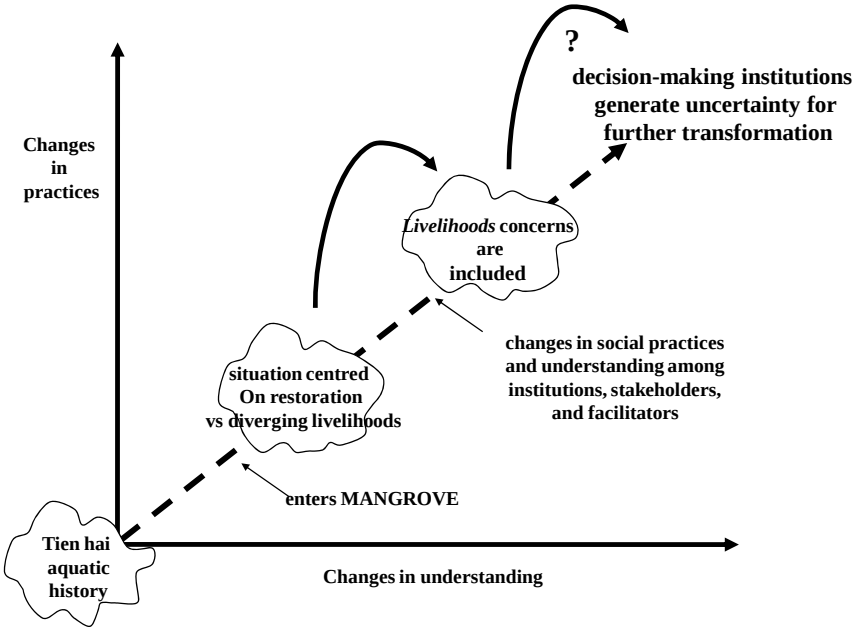
The first stakeholder workshop was organized on 10 December 2007 in Thien Hai Province. There were ?? participants (men and women) from three communes and district staff. The community members represented shrimp farmers, clam farmers, community members collecting wild fishery products, cattle tenders and community members involved in Mangrove replanting and protection project.

Purpose

- To review and discuss project problem definition from different stakeholder perspectives.
- To understand how different stakeholders are affected in different ways.
- To understand what kind of solutions are presented and by whom?

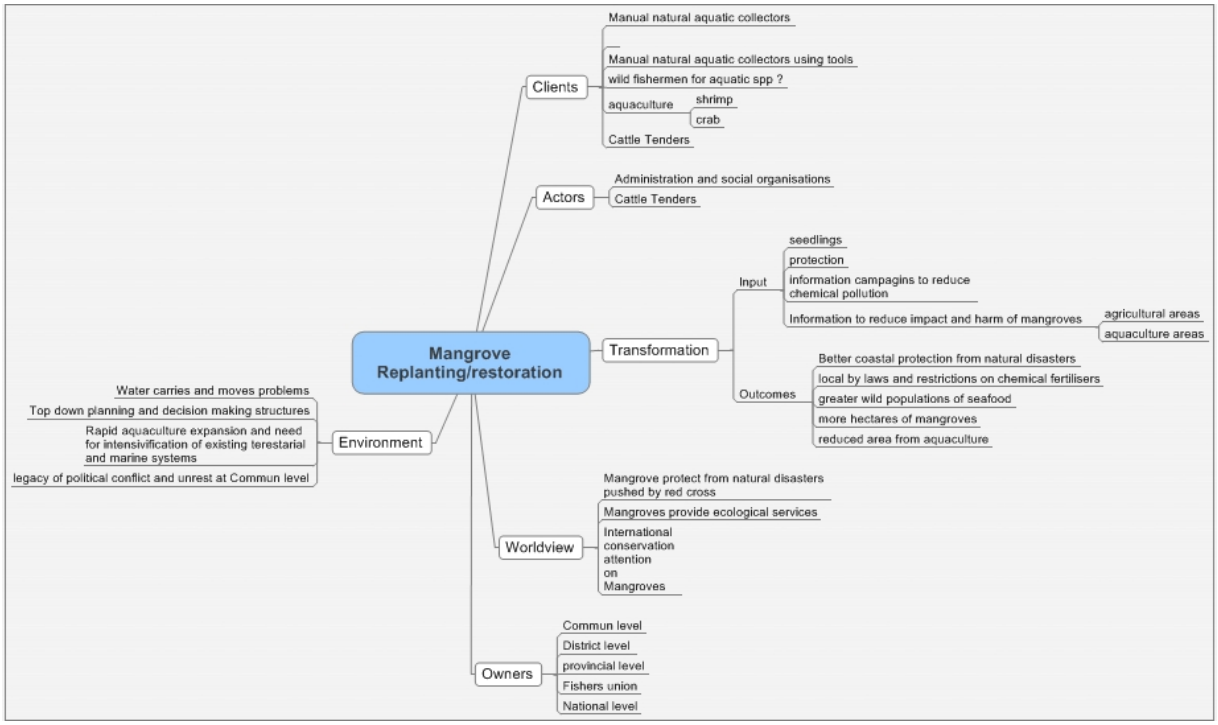
Process

The stakeholder workshop is an opportunity for the project to critically reflect on our approach and how it is perceived by different stakeholders. The idea is to document the process of the interaction to better understand how different stakeholders perceive the problem and how they think it should be addressed. The stakeholder workshop will guide the project in terms of linking people and research and provide ideas for how we plan the next steps and what is relevant for the analysis.



Outcome

CATWOE drafted the prior to the stakeholder workshop



CATWOE revised after the stakeholder workshop

Next steps

INSERT

CATWOE in Thailand

INSERT

CATWOE in Indonesia

INSERT

Further reading:

- Bawden (1989) Towards action researching systems
- Checkland (1981) Systems thinking, systems practice
- Checkland (1990) Soft systems methodology in action
- Travis and Venable (1998) An introduction to soft systems methodology

http://portals.wi.wur.nl/msp/index.php?ID=109&IDsub=110