

Power relations and participatory water management: Lessons from a companion modelling experiment in northern Thailand¹

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INTRODUCTION: WHY FOCUS ON POWER IN PARTICIPATION?

In Thailand as in other countries in Southeast Asia, the recent general policy-making framework regarding natural resource management is favoring decentralization and public participation. The reform of the *Tambon* (sub-district) Administrative Organization (TAO) in 1994 and the adoption in 1997 of the so-called “People Constitution” embracing participation principles were two major turning points (Arghiros 2001; Rutherford 2002). The empowered TAO with their councils of elected villagers (two representatives per village) were held responsible to promote participatory decentralization on the ground, in particular in natural resource management (Puntasen 1997).

As soon as the late eighties participation had become a buzz word in numerous projects and organizations in Northern Thailand (Neef 2004). However, there are several ways to understand the word participation, leading to different practices, and having different kinds of impacts. Hirsch (2002) broadly defines two main families of practitioners: those seeing participation as a mean, and those seeing it as a goal. While the first ones use participation to make local people and institutions accept more easily decisions taken at a higher level, the second ones aim at increasing local people and institutions’ voices in decision-making processes affecting them (Pretty 1995). However, because of high social heterogeneities among stakeholders, “maximum participation” of all stakeholders (and in particular the less privileged ones) is not always possible and does not necessarily lead to more social equity (Leeuwis and Van Den Ban 2004). Drawing lessons from numerous participatory water management projects conducted in the past, more and more authors argue that because of a lack of attention to the complex political contexts in which these projects were embedded, the less-powerful stakeholders were often left behind (Lavigne-Delville, Selamna et al. 2000; Cornwall and Gaventa 2001; Wollenberg, Anderson et al. 2001). Did a third family of practitioners of participatory approaches emerge? According to Faysse (2006), the importance of power in participation has drawn an important divide among scholars. Two main attitudes may be distinguished: a “dialogue” vision and a “critical” vision. According to the proponents of the dialogue vision, the main obstacles to fruitful coordination stem from a lack of genuine communication among stakeholders. Once this barrier is removed, it is possible to build a common vision, and to achieve consensus (Röling and Wagemakers 1998). In the nineties, the “critical learning system approach” emerged (Jackson 2000). Proponents of a “critical” vision argue that power relations need to be addressed prior to the participatory process, otherwise there is a high risk to see the process deepening existing social inequities (Jackson 2000; Edmunds and Wollenberg 2001). We adopt this vision and see participation as an interactive process of collective learning, negotiation and coordination among stakeholders. Participatory water management is then facing new challenges. Its political ecology has to be analyzed in its complexity, with its multiple stakeholders having differing

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or competing interests, imbedded in a network of power relations, and interacting at various levels of governance.

Ribot (2001) analyzed power relations and participation in a context of decentralization and public participation. This author questioned the representation and the accountability of the numerous local stakeholders who claim to speak for local people in participatory processes. In northern Thailand, those stakeholders are typically village headmen, TAO representatives, religious leaders, and usually belong to local elite. Because of the lack of communication between these people and their constituencies, and because they are themselves imbedded in a network of power relations, few are systematically downwardly accountable to their constituencies as a whole, and this represents a major threat to democratic decentralization.

The participatory approach analyzed in this article is called Companion Modelling (ComMod) and its purpose is to stimulate collective learning and coordination among multiple stakeholders to mitigate a common natural resource management (NRM) problem through the collective building and use of simulation tools (Bousquet, Barreteau et al. 1999; Barreteau and al 2003).

The importance of conducting an analysis of power relations prior to a ComMod process to tackle them along the conducted process is currently open to debate among ComMod practitioners. Drawing on a ComMod experiment about water management in a highland community of northern Thailand, this article aims at enriching this debate through an in-depth analysis of the impact of power relations on a ComMod process. The water management problem in this case study has its origins in the recent expansion of irrigated lychee and Oolong tea plantations in the village catchment. More and more social tensions occur within the community because only a minority of relatively well-off farmers have access to water to irrigate their plantations. The ComMod process aimed at stimulating collective learning and negotiation about this problem among villagers, and between villagers and the TAO (sub-district administration) having financial resources to fund local projects such as the construction of small-scale water infrastructures.

This contribution starts with a presentation of the ComMod methodology and the conceptual analytical framework of the socio-political system and its changes along the process. Then we draw a picture of the initial situation regarding water management, with a particular attention to horizontal and vertical power relations and to the role, behaviour, and accountability of local representatives. Following a description of the collective learning and negotiation process triggered by ComMod, we analyze the influence of power relations in the process and their changes along it to answer the question: how far the diversity of interests (and in particular the less powerful's ones) was taken into account in the triggered process of interactions? The article ends with a discussion on the potential and limits of the ComMod methodology for accommodating multiple interests in an equitable manner. Key methodological features favouring the leveling of the playing field are identified. In the concluding remarks, several suggestions are made to improve the ComMod methodology for such a purpose. We argue that it is necessary to conduct a preliminary analysis of the socio-political system to identify the potential constraints and pitfalls to an equitable outcome of the participatory management process, and to mitigate them. Following Webler's advice (1999), we do not only focus on "what works", but also analyse "why it works" and "how it could work better".

CONCEPTUAL FRAMEWORK & METHOD

Conceptual analytical framework

This section presents the conceptual framework used to analyze the initial ecological, social and political system and its changes along the ComMod process in terms of collective learning and negotiation among the various stakeholders. As the objective of this contribution is to analyze the importance of power relations in a ComMod process, power relations are at the core of the analysis of both the initial situation and the effects of the process.

Analysis of the initial ecological, social, and political system

To elaborate our conceptual analytical framework of the local agro-socio-ecosystem, we relied on several theoretical inputs as shown in Figure 1.

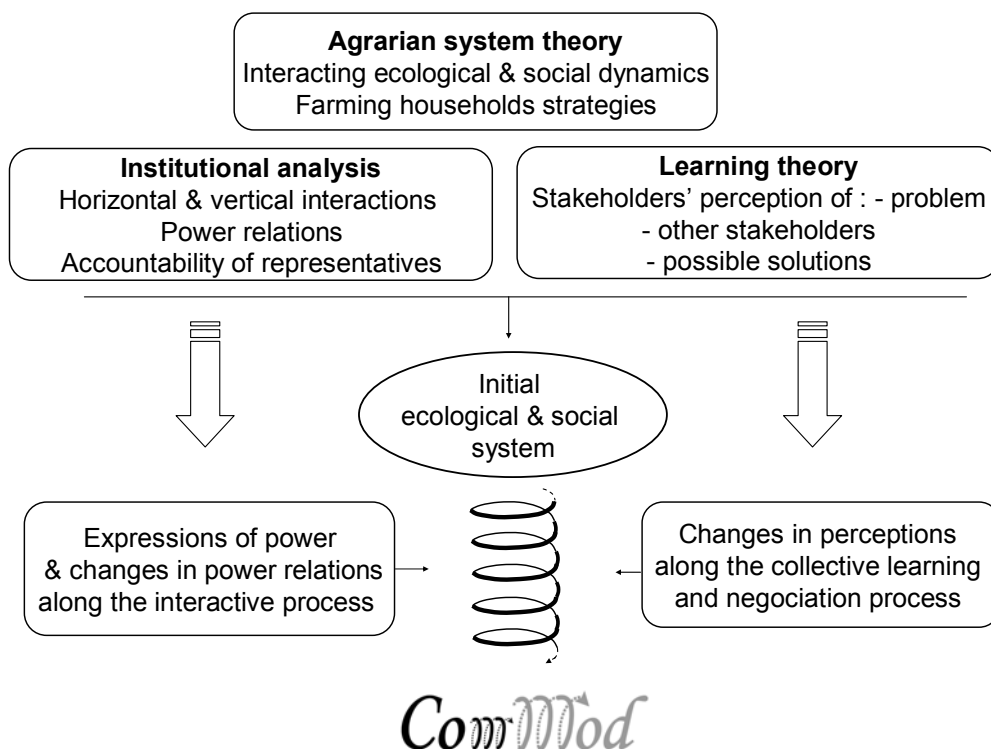


Figure 1. Conceptual analytical framework.

We used the agrarian system theory (Mazoyer and Roudart 1997) to examine the interactions between the socio-economic and agro-ecological dynamics of the local system, and to determine differences in farming households constraints, aspirations, and strategies (Trébuil and Dufumier 1993). We also used an institutional analysis to further elaborate on the political ecology of water management at this research site. Institutions are here defined as a set of formal and informal rules that regulate the interactions among people, i.e. the rules of the game of a socio-political setting (Ostrom, Gardner et al. 1994). In the context of decentralization, these interactions were analyzed according to two dimensions and in term of power relations along them:

- horizontal interactions among people within the community, and
- vertical interactions between villagers and higher level institutions such as TAO.

At the intersection of these axes lays the key role of village leaders and representatives, in particular village headmen and elected members of the TAO council.

The way power relations are characterized is crucial because it influences the way they are tackled. Classical dichotomies seeing the powerful on one side, and the powerless on the

other side are problematic because they do not take into account “the power of the powerless”, and therefore deny their possibility of empowerment as to empower means to reinforce an existing power (Vermeulen 2005). Weber (1968) broadly defined power as the chance that an individual in a social relationship can achieve his or her own will even against the resistance of others. According to the structural properties of social systems as defined by Giddens (1984), resources to exert power can be categorized into three main types: (a) knowledge, (b) cultural norms and values attributing authority and responsibility to certain roles, and (c) physical resources such as money, natural resources, human resources and networks (Van Paassen 2004). This characterization of power is useful as it embraces several aspects of a social system. Weber (1968) analyzed more precisely the second source of power. He defined authority as legitimate forms of domination and identified three main types of authority: legal, charismatic, and traditional. Boulding (1989) characterizes power relations according to their mechanism: stick, carrot, or hug. The stick and carrot are familiar metaphors, stick standing for force, and carrot for enticement. Both are coercive forms of power. The most interesting concept in Boulding’s characterization of power is the hug because it provides a variable to look at the empowerment of the disadvantaged. Hug is a way to describe integrative or cooperative forms of power, i.e. the power of people joining together and obeying to the same principles because they have the feeling they belong to the same group. In Giddens’ classification of power resources, this type of hug or cooperative power uses human resources and networks. Counter power (the power to oppose to the oppressors) can be seen as a form of cooperative power of the less powerful stakeholders.

Because our ultimate purpose was to examine how the ComMod process would produce changes in the system in terms of communication and coordination, we also used the collective learning and negotiation theory which focuses on changing perceptions and interactions (Leeuwis and Van Den Ban 2004). Following the identification of the main concerned stakeholders, we analyzed:

- their perception of the water issue (interest in, knowledge about and collective vision of this issue),
- their perception of other stakeholders and their interactions with them,
- their perception of possible scenarios to mitigate the problem.

The stakeholders’ perceptions and interactions were analyzed before the third ComMod cycle about water management (analysis of the initial situation), and we followed their evolution all along this cycle. Next section provides more details on the conceptual framework used to analyze the effects of this third ComMod cycle.

Analysis of the effects of the Companion Modelling process

The effects of the ComMod process were analyzed in terms of collective learning and negotiation processes. Leeuwis (2004) distinguishes between distributive and integrative negotiation. Distributive negotiation occurs when stakeholders tend to hold on their own positions, try to impose their vision at the detriment of other people’s interest, and finally use the negotiation to “divide the cake”. ComMod tries to trigger more integrative learning and negotiation processes because they give more positive outcomes. In integrative negotiation processes stakeholders reframe the problem and create new problem definitions allowing to “enlarge the cake” and to identify “win-win” solutions. Such integrative negotiation is based on a creative collective learning process made of several tasks: learning about the current situation, increased awareness of a problem to be solved collectively, learning about other stakeholders’ perceptions, collective (re)phrasing of the nature of the problem, coordination of interests through identification and negotiation of new scenarios to solve the re-phrased problem (Leeuwis 2004).

To pay a special attention to expressions of power relations and to their changes along the negotiation process, we used various theoretical and practical inputs about power and empowerment in multi-stakeholder processes. Among all the possible expressions of power in a participatory process, Faysse (2006) highlights the following three ones:

- the power to impose one's ideas during the discussion and control the decisions taken by dominating the discussion, and/or ignoring other people's opinions (using knowledge and communication skills as sources of power);
- the power to control the implementation of these decisions and not to follow the agreement made during the discussion (using authority as a source of power); and
- the power to stay away from the negotiation process. This will happen if such stakeholders have a good BATNA, i.e. a Best Alternative To No Agreement (Fisher and Ury 1981). They use physical resources as a source of power. It means that they might not negotiate with the less powerful stakeholders unless they have no better option.

In some settings powerful stakeholders only engage in negotiations once the other parties have created alliances and increased their cooperative power base (Ramirez 2001), or only when they are forced to do so by an even more powerful agent operating at a higher level in the system hierarchy. If and when they decide that they have no better option, the less powerful need to have the *capacity* to defend their interests. They should be free to express themselves, have access to information, and be able to understand the issue at stake. To do so, some might need to be empowered. These dynamics of empowerment are crucial when trying to achieve democratic participation. Rowlands (1995) identified three dimensions of empowerment:

- personal empowerment: the development of selfconfidence and personal capacities,
- relational empowerment: the development of skills for negotiation and influencing the basics of a relationship and the decisions made within it, and
- collective empowerment: learning to work together to achieve more.

A Companion Modelling process paying attention to power relations

Co-construction of simulation tools such as Role-Playing Games and Multi-Agents Systems

The main objective of the ComMod approach conducted in this case study was to trigger collective learning and negotiation among stakeholders having a common water management problem. The main methodological principle of ComMod is to co-construct simulation models integrating different stakeholders' points of view, and to use them to collectively explore and discuss various scenarios for the future. The practical implementation of ComMod combines the use of different tools such as individual interviews, group debates, Multi-Agent Systems (MAS) and Role-Playing Games (RPG).

MAS are appropriate simulation tools to examine complex renewable resource management problems because they focus on interactions among heterogeneous social agents and their common environment. RPGs are appropriate to represent complex systems and their interactive dynamics, and to stimulate exchanges of perspectives among stakeholders. In this experiment, the RPG (played by villagers) is a simplified version of the MAS model, the RPG and its associated MAS model are two versions and implementations of the same conceptual model. The RPG helps participants to understand and criticize the model.

ComMod is a continual and iterative process implemented in a cyclic way. Figure 2 illustrates the three successive ComMod cycles implemented at this study site.

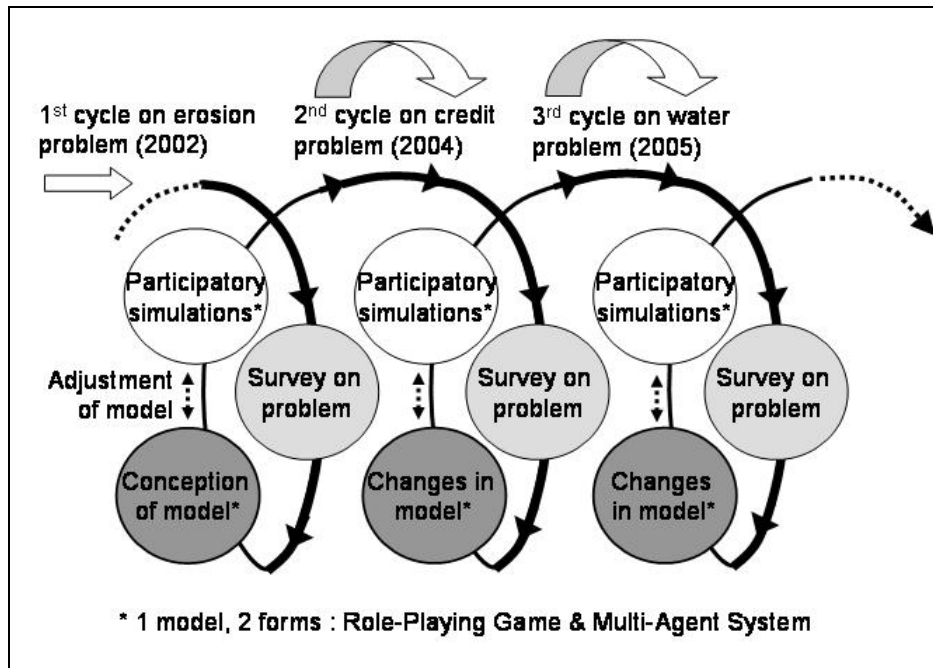


Figure 2. The three successive Companion Modelling cycles implemented in Mae Salaep village of Chiang Rai Province, northern Thailand, between 2002 and 2005.

The learning process stimulated in a cycle raised new questions that were examined in the following cycle with new adapted RPG and associated MAS model. In the first cycle focusing on the soil erosion problem, the participants identified the expansion of perennial crops as a promising solution, and requested to focus the second cycle on the socio-economic constraints limiting their ability to invest in plantation crops (Trébuil, Bousquet et al. 2002; Barnaud, Promburom et al. 2005). Later on, as these perennial crops requested irrigation to improve yield and product quality, more social tension occurred among villagers because of a growing gap between water availability and increasing needs. The participants requested to examine this water problem in a third ComMod cycle, which is presented and analyzed in this article. Its implementation is described in box 1. For this third ComMod cycle on water management, the participants also requested the participation of the TAO because this organization has financial resources to fund local projects such as the construction of small-scale water infrastructures. That was an opportunity for the researchers to analyze interactions between communities and higher level institutions.

- Institutional analysis of the water problem: semi-structured interviews with villagers, village headman, TAO village representatives, TAO officers, and the President of the TAO council.
- Modification of the previous RPG and MAS model to focus the activities on the water problem.
- Participatory workshop (Day 1): Gaming sessions (12 villagers-players)
 - Morning: 1st gaming session (current situation scenario).
 - Debriefing in plenary session: problem definition & suggestion of solutions by the participants.
 - Presentation of these propositions to the TAO council President.
 - Afternoon: 2nd gaming session to test one of the proposed solutions.
- Participatory workshop (Day 2): Individual interviews of players
 - To compare researchers' and players' understandings & representations of the situation,
 - To better understand players' behaviour during the gaming sessions,
 - To learn about their individual opinions regarding the discussed issues,
 - To assess the learning effects of the RPG.
- Participatory workshop (Day 3): Participatory simulations & collective discussion of scenarios
 - (i) Baseline scenario corresponding to the current situation,
 - (ii) Simulation of scenarios testing the participants' propositions.
- Continuous monitoring & evaluation of the process:
 - 3 weeks later: individual interviews with all the participants to assess the effects of the workshop & participatory simulations within small homogenous groups to accompany the on-going discussions.
 - 3 months later: previous activity was repeated.
 - 10 months later: "story telling" interviews with key participants to follow-up on the evolution of exchanges among villagers.

Box 1. Main steps of the third ComMod cycle about irrigation water implemented in Mae Salaep village of Chiang Rai Province, northern Thailand, in 2005.

Methods to analyze the initial situation and the effects of the ComMod process

We previously described the conceptual analytical framework used to analyse the initial situation, the effects of the ComMod process, and the influence and evolution of power relations along the process of triggered exchanges among villagers. From a methodological point of view, the data analyzed according to this conceptual framework were obtained through individual interviews conducted before and after the ComMod workshop, and observations made during the workshop (Box 2):

- semi-structured individual interviews before the workshop to understand the initial situation,
- observations of the players' behaviour during the gaming sessions and group debates,
- semi-structured interviews conducted the day after the game,
- new semi-structured interviews conducted three weeks & three months after the workshop for a continuous assessment of the effects (changes in perceptions, behaviour, communication and interactions, and practices).

INITIAL SOCIO-POLITICAL CONTEXT

Agrarian situation and water management problem

Mae Salaep is an Akha village located in a highland catchment of Chiang Rai Province in upper northern Thailand. Small-scale poor farmers are being rapidly integrated into the market economy and over the last two decades their former agrarian system based on swiddening was replaced by mainly permanent cash-crop based agriculture on steep slopes (Trébuil, Kam et al. 1997). One of the innovations adopted by villagers during this period is the plantation of perennial crops such as lychee and, more recently, green tea. As the lychee yields and quality are much higher under irrigation in the dry season, farmers who could afford the investment started to use gravity irrigation in the early nineties. The irrigation

system consists of a network of small PVC pipes connected to the creeks. Each creek is usually providing enough water to one to three farmers, depending on the rainfall and the plantation size. A few farmers also have small ponds to store water. Contrary to lychee, Assam tea doesn't require irrigation nor external inputs. Its commercial value is less important but more stable than lychee's one⁶. Villagers call it the "perennial crop of the poor", but many poor households still cannot afford it because of a lack of access to adapted credit (Barnaud, Promburom et al. 2005). In recent years, government agencies introduced the high added-value variety of Oolong tea which production requires high levels of input and irrigation. As Oolong tea and lychee are expanding in the catchment, there is an increasing problem of water scarcity in the dry season. More conflicts occur in the community because only a minority of relatively well-off farmers and first settlers have access to irrigation water. This is due to the "first arrived first served" rule which stipulates that once a farmer has set up water pipes in a creek, other villagers cannot get water from the upstream section.

The *Tambon* Administrative Organization (TAO) and its representatives

TAOs are considered as key administrative institutions towards democratic decentralization in rural Thailand (Puntasen 1997). Decisions regarding the allocation of TAO resources are taken by a council of elected members (two elected representatives per village), and a presidential team made of a president and two vice-presidents elected by the *tambon* population. However, there are still obstacles on the way to reach the desired aim. According to Arghiros (2001), local participatory patterns cannot develop because Thailand's highly centralized bureaucracy still promotes its own hierarchical and "top-down" institutional culture. Moreover, most of the TAO representatives come from the local economic elite, and the democratic mechanisms of responsiveness and accountability cannot function because elections are commonly distorted by vote-buying.

In this case study, the interviewed TAO President had perfectly absorbed the participatory discourse: "We want to support villagers' own initiatives. They should conceive the projects themselves. If the President does it for them, it cannot work." However, as we will see later in this article, there is a sharp contrast between this discourse and the actual practices of this TAO President as it is often the case in participatory projects (Pijnenburg 2004). The two TAO village representatives from Mae Salaep belong to the relatively well-off type of farmers from the early settling clans, which are also the largest ones, a factor explaining also why they could more easily win elections. Following the administrative reform and the increase in financial resources allocated to the TAOs, there was a shift of interest of the local elite from the village headmen positions to TAOs village representatives. As no one really wants to be village headman, this position is often occupied by farmers who don't feel very much concerned by the well-being of their community. As for the TAO members, they show more interest in local politics but their downwards accountability to the community as a whole is clearly put into question as they are commonly accused by people from other clans to take advantage of their position to serve their own clan's interests in the implementation of village projects. Moreover, they feel much more upwards accountable than downwards accountable. In Mae Salaep, if the TAO President has well adopted the participatory discourse, the two TAO village representatives define their role as being top-down relays between the sub-district administrators and the villagers, without mentioning their involvement in any bottom-up mechanisms. Both of them said that their "role is to inform villagers about the government' decisions", and this reflects how decentralization is practised on the ground.

⁶ Lychee and Assam tea prices fluctuate from around 3 to 70 Bahts/kg and 6 to 12 Bahts/kg respectively.

In terms of power relations, the TAO President and the representatives use their legal authority and their access to resources (information, TAO budget, etc.) to exert power. In Boulding's terms, they exert mainly a "carrot" type of power because they can influence the way projects will be implemented, and therefore who will benefit from them.

According to a study conducted by Heyd and Neef (2004) in another area of northern Thailand, villagers did not feel any change in term of their ability to participate in decision-making since the TAO reform. In Mae Salaep, although some villagers complained about the inadequation between their needs and the TAO projects, almost none of them is aware of the active role they could (and should) play in the elaboration of these projects.

Main stakeholders' perceptions and interactions

Main types of farming households

Farming households' integration into the market economy has led to an extensive socioeconomic differentiation among them which can be characterized by different amounts of available productive resources, and related specific socio-economic and land-use strategies (Table 1).

Table 1. Characteristics of the main types of farming households in Mae Salaep of Chiang Rai Province, upper northern Thailand.

Farm type	A. Vulnerable landless or very smallholders	B. Self-sufficient & medium-sized farms	C. Relatively large & diversified farms
Size (ha/labour ⁽¹⁾)	0,4 – 0,8	0,8 – 2,4	1,3 – 3,2
Main crops	Maize (for cash).	Upland rice (for family consumption), maize, small and rainfed plantations of Assam tea or lychee.	Paddy rice (for family consumption), maize, extensive irrigated plantations of lychee, Oolong and/or Assam tea.
Off-farm employment	To meet basic family needs.	To mitigate fluctuations of farming incomes.	To raise cash & invest on the farm.
Total annual household cash income (US Dollars/year) ⁽²⁾	200	420	1160
Investment capacity	Nil	Weak	Significant

⁽¹⁾ 1 labour unit is equivalent to 300 working days per year.

⁽²⁾ The local household surviving threshold (to meet the household basic needs) is 210 USdollars / household/year, while the annual income from minimum wages paid to city workers is 750 US dollars/year.

Type C farmers are well-off farmers belonging to influential clans of first settlers with access to water and the most productive farm land. They were able to claim large farming areas, accumulate capital, and invest in profitable off-farm activities allowing them to invest in large lychee plantations. This confers a high social and economic status to them in the village. The old men of these clans are members of the traditional council of elders which has less influence than in the past, but is still respected and retain some traditional authority. Moreover, as they were the first settlers, their farm land is located in the lowlands of the watershed, with less steep slopes and a better access to water allowing them to grow more paddy rice than others. When they started to irrigate their orchards some 15 years ago, they claimed that the "first arrived first served rule" was an ancestral custom to regulate access to

water. They reinforced this rule (and the claim of its ancestral nature) when the number of villagers looking for access to water started to increase. Two main attitudes are observed among them: those who strictly apply the rule, without any arrangements, and those who agree to set up arrangements such as exchanges of water against money, labour, or for free. The adoption of one attitude or another depends on the age of the farmer (young ones are often more individualistic as they have a new family to feed), on the amount of water available, and on the relationship among farmers (more arrangements are observed among people belonging to the same clan).

The heads of type A and B farming households are either widows, or men who immigrated more recently, and belong to smaller and less influential clans. They do not have access to water. Some of them have invested in low yielding rainfed lychee plantations. However, most of them do not dare to put the “first arrived first served rule” into question. Two social power related mechanisms explain this fact. First, they have a strong sense of belonging to the community, and do not want to break a rule considered as an ancestral community one. Moreover, they are usually in a relation of dependence (or patronage) with the powerful type C clans from whom they borrow money when needed or work as daily hired labourers on their farms (these wages being often their main source of cash income), etc. In terms of power relations, Type C farmers use both traditional authority and physical resources to exert a “carrot” type of power over type A and B farmers.

Village leaders and representatives

Two opposing leaders played a key role in the ComMod cycle about water. The first one is a TAO representative. He has the reputation in the village to draw and implement the TAO projects to serve his own or his clan’s interests. He recently concluded a deal with an external investor who bought 6,25 ha of land in the village with the idea to plant it to Oolong tea in the future, the TAO representative taking care of the plantation and sharing the product with the investor. As such a plantation would require a lot of irrigation water, this TAO representative had a strong personal interest to defend in the ComMod cycle about water.

The second stakeholder who played a key role in the ComMod process is the religious leader of the Christian community which represents 60 % of the village population. He is a well-off farmer, but he does not belong to any of the powerful clans. He is a respected person in the village, as a religious leader and as a leading innovator. As a knowledgeable person, he holds a charismatic authority, and creates a “hug” kind of power within the Christian community, as well as among all the poor villagers because he actively promotes equity by supporting households facing difficulties (by providing technical advice, through free distribution of tea seedlings, etc.). Contrary to the TAO representative, he doesn’t speak Thai, and does not express himself easily during plenary debates. However, he was the first one who raised the idea to use the game to discuss the water problem and who requested to invite the TAO.

The village headman was interviewed and warmly invited to take part the ComMod process. He was not available at that time, but he sent a member of the village committee to replace him, and his father, a type C farmer belonging to the council of elders, participated. However, his absence reflects a general lack of commitment for the village’s well-being, which is a frequent phenomenon in rural Thailand since the TAO reform in 1994.

In summary, Figure 3 represents the power relations among the participants in the ComMod process, including the potential counter-power of the less powerful.

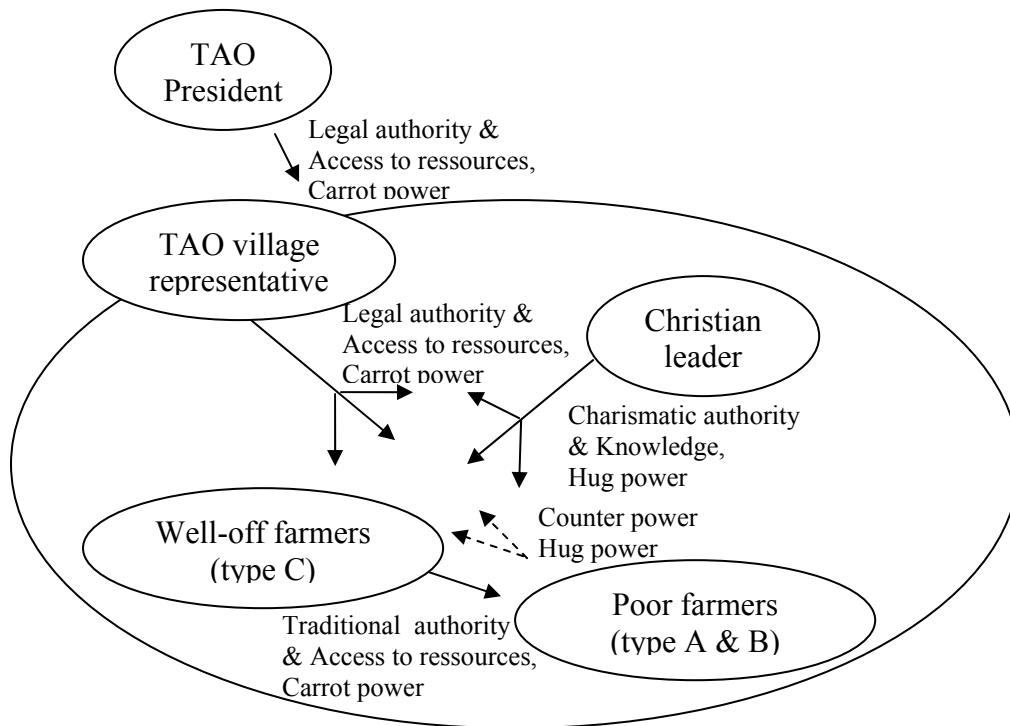


Figure 3. Initial power relations among the participants in the ComMod process implemented in Mae Salaep village of Chiang Rai Province, northern Thailand, in 2005.

POWER DYNAMICS IN THE LEARNING AND NEGOTIATION PROCESS

What happened during the ComMod process?

Box 2 provides a description of the chain of events that occurred along the third ComMod cycle.

1. The first gaming session highlighted the problem of unequal access to water. Three well-off farmers (including the TAO representative) urged to plug their pipes into the two creeks of the gaming board, and prevented other players from putting new pipes in the upstream sections. Therefore only three out of twelve players had access to irrigation water.
2. This first gaming session was followed by a short debriefing for players to exchange their views on the water problem and to identify possible solutions. Among players with no access to water, some said the problem was the lack of money to buy pipes, while others said the problem was the geographical location of their plots (above the streams). Players with access to water said the problem was the lack of water. The TAO representative then summarized the situation by saying that there were two problems: the lack of water, and the plots located above the streams.
3. The TAO representative suggested to build a large reservoir above the village, a project which he already presented to the Irrigation Department, and was rejected. The other participants looked skeptical about this suggestion as it would benefit only a minority of farmers, but none of them openly expressed any disagreement. When the facilitator asked for other suggestions, the Christian leader suggested to build small weirs on several creeks and to share the water within small user groups of three to four households. The facilitator made the participants vote by a show of hands: all (including the TAO representative) participants agreed on this second suggestion, except a participant whose plots were located above the streams. There were further discussions among the participants and they decided to test this scenario and associated water allocation rules in the game.
4. When the participants presented their suggestion to the TAO President, she did not really answer to the suggestion and explained that villagers should remember that they have no land titles and be aware that they might be relocated from the highlands one day, so they should wait for water management plan at the national level before taking any decision. After her intervention, the players decided to test their preferred scenario anyway during the afternoon gaming session.
5. Two small weirs were added across the two creeks of the gaming board. All the players who had lychee plantations and had no access to water in the previous gaming session progressively decided to invest in pipes to connect their plots to the weir. This stimulated new discussions among players about the rules for the allocation of water among the groups of beneficiaries. They could further investigate this issue during the participatory simulations on the third day of the workshop. The TAO representative dominated the discussions and suggested that if such infrastructures were built, water should be allocated proportionally to the size of farmers' plantations, i.e. a water sharing rule favouring the well-off farmers. No one contested this suggestion at first.
6. But three weeks later, when new sessions of participatory simulations among smaller and homogeneous groups were conducted, villagers had continued to discuss among them and agreed on another way to share the water if the small weirs were built. They suggested to allocate the same amount of water to each beneficiary of the weir, with the possibility to lend temporary water rights to other members in case of excess. The TAO representative tried again to make his point (saying that "poor villagers are not ready for irrigation") and never really agreed with the majority.
7. Three months later, the TAO representative was about to present a project to the TAO council which looked much more like his initial suggestion (a single reservoir above the village) than the agreed upon collective option negotiated during the ComMod exchange, that is several small weirs on several creeks.
8. Ten months later the TAO representative and the Christian leader had finally collaborated to design a new project merging ideas from both, and still favouring the powerless people who don't have access to water.

Box 2. Chain of events during the ComMod process related to water issue implemented in Mae Salaep village of Chiang Rai Province, northern Thailand, in 2005.

Analysis of power dynamics in learning and negotiation process

Increased awareness of a collective problem: a first step towards changing power relations?

During interviews before the gaming sessions, well-off farmers having access to water always said that “there is no water problem in the village, no conflict, everything is all right.” They have obviously a good BATNA and more interest in a statu quo situation than being part of a process to solve the problem of those who don’t have access to water. Even among people who don’t have access to water, many will not dare to say that actually there is a problem. This is very linked to the cultural context: Akha people, like Thai people, usually do not like to say that “there is a problem” because they prefer to avoid confrontation.

However, in the gaming session, as they played exactly like they behave in reality, they implemented the first arrived first served rule, and the problem of unequal access to water became obvious to all (Box 2, step 1). They said that it happened exactly like in reality and the Christian leader thinks that: “the game showed them that we need to change the water access rules, no need to speak about it”. This “no need to speak” dimension probably played an important facilitating role in a cultural context dominated by the avoidance of direct confrontation.

Phrasing the nature of the problem and the direct expression of interests and power relations

The phrasing of the problem is a crucial step in a negotiation process as it will influence the way people look for solutions. In this case, when asked about the problem they encountered in the first gaming session, the players with no access to water could have said the problem was the “first arrived first served rule”. But none of them dared to say that in the plenary discussions. So, instead, they just said the problem was the lack of money to buy the pipes, or the topographic position of their fields (Box 2, step 2).

The TAO representative used his authority and his communication skills to impose his ideas during this phase and to emphasize the lack of water aspect, which implied the need for new water storage infrastructure.

The Christian leader did not say anything at this point. He knew it was impossible to question directly the “first arrived first served” rule because well-off clans would not accept it. As he and other participants said later: « it will be possible to change the “first arrived first served” rule only if we build new water infrastructures that will lead us to discuss new water allocation rules. Without new infrastructures, it is impossible to change the rules.” Therefore, at this precise stage, it was also in his interest to let the TAO representative say that the lack of water was at the centre of the problem.

This phrasing of the problem might also be explained by the fact that people generally prefer talking about issues rather than about persons. It is even commonly advised in negotiation processes, not to raise emotions unnecessarily.

Coordination of interests and negotiation of solutions: empowerment of the less powerful is needed

In a collective learning process, in spite of previous phases of improved communication and exchanges of perceptions among participants, the phase during which the participants synthesize the diverse expressed facts and arguments to formulate a preferred pathway to a solution is determining. It is at this stage that the most influential participants risk to impose (consciously or not) their point of view (Van der Veen 2000). Indeed, in this case study, at this stage the most powerful stakeholders used various forms of power to influence the course of the process:

- the power to impose one's ideas during the discussion, when the TAO representative imposed his way to share the water during the first session of participatory simulations (Box 2, step 5),
- the power to control the implementation of these decisions, when this representative was about to present a project to the TAO which did not follow the agreement made during the discussion (Box 2, step 7),
- the power not to join the discussion, when the TAO President did not answer the villagers' proposition and simply spoke about something else (Box 2, step 4).

However, along this process, the interests of the less powerful stakeholders were progressively taken into account:

- when during the gaming sessions, the researchers asked the participants to vote for one of the two suggested solutions, the majority of the participants voted for the small weirs option made by the Christian leader (Box 2, step 3),
- when the researchers came back three weeks after the workshop, they could see that after further discussions among villagers behind the scene, the majority agreed on more egalitarian rules for water allocation (Box 2, step 6), and
- when the researchers came back ten months later, after discussions at the village level, the project that was finally presented took more clearly into account the interests of the less powerful stakeholders than the one initially suggested by the TAO representative (Box 2, step 8).

This was achieved through a process of empowerment characterized by several dimensions:

- *personal empowerment*: the development of selfconfidence is particularly important in the context of northern Thailand where the numerous prejudices against ethnic minorities are so strong that villagers themselves feel that they are not able to have any good ideas and to express them: "I never went out of the village, I never learned anything, I cannot have ideas" said an old man. The ComMod process improved the participants selfconfidence: "I did not know that I would be able to play the game, to think by myself about solutions" said a female participant. The ComMod process also supported the development of their personal capacities by allowing them to better understand the situation, and stimulating their ability to imagine new solutions. "The game allows us to distance ourselves from our problems, and to discuss together about them" said a participant. "Without the game, we would go on in our every day life" declared another one.

- *relational empowerment*: except from creating the event and therefore giving to the participants the opportunity to communicate, the ComMod process did not directly triggered an increase in the participants' communication and negotiation skills, but it did indirectly as relational empowerment is very linked to personal and collective empowerment (general increased self-confidence to defend one' interests in negotiation).

- *collective empowerment*: this is one of the stronger effect of the ComMod process which came out from the evaluation interviews. Most of the participants insisted on the idea that the game made them realize that they were collectively "stronger" or "more intelligent" than individually and could find better solutions. "In real life, we do not have such opportunities to think collectively. Everyone goes in the field, and is alone to solve his problem" said several participants. In this ComMod experiment, this collective empowerment goes further than just "thinking collectively". There was a process of empowerment through the creation of alliances allowing the reinforcement of a counter power as the less powerful stakeholders realized that they could join together to make their voice louder. "I realized that many of us face the same problem" said a participant. The Christian leader played a key role

in the construction of this alliance. As a woman said: “if I think alone, I do not have good ideas. But if we think all together, we can all benefit from the good ideas of people like the Christian leader”. This counter power was also born from their increased self-confidence making them more aware that it was possible to question long standing rules. A better understanding of the situation probably also made them realize that they had a weak BATNA and that if they did not do anything, they would never have access to water. Most of this counter power was built between the formal activities implemented along the ComMod process, behind the scenes when villagers discussed among family members, with neighbours, and with the Christian leader.

It is probably because this counter power had become better organized and stronger that the TAO representative finally decided to collaborate with the Christian leader to establish a new project taking into account the interests of type A and B farmers (Box 2, step 8). A turning point might have been when some of the elders of the powerful clans themselves turned to be in favour of a new discussion of the rules, realizing that there would be more and more conflicts about water in the future if the *statu quo* was defended.

POTENTIAL AND LIMITS OF THIS COMMOD PROCESS TO LEVEL THE PLAYING FIELD

Key methodological features favouring the accommodation of multiple interests

Selection of the participants

Contrary to some other academics, Edmunds and Wollenberg (2001) argue that not all stakeholders should systematically participate in a multi-stakeholder process. If not yet empowered prior to such exercise, the less powerful ones might not be able to defend their interests properly. This is why we implemented the ComMod process at the village level first, and integrated stakeholders from higher institutional levels only when the villagers felt at ease to do so and requested their participation themselves. When selecting the participants, we also tried to avoid the representation of a category of interest by a single, shy or intimidated person. For example, several women could have been very intimidated when participating alone but more self-confident when sitting next to acquaintances. But to keep the process manageable, the number of participants in the main activities (especially RPG sessions) is rather limited. And ensuring that what happens during these key moments is disseminated to other villagers is important.

By providing them with an opportunity to meet and exchange their ideas, the selection of the participants also influence the kinds of alliances that could emerge during the process. The identification and the presence of a key stakeholder such as the Christian leader, who was particularly bottom-up minded and had sufficient charismatic authority to stimulate people to join together, was crucial to reinforce the voice of the powerless.

The co-construction of tools within the reach of everyone

One of the challenges in the implementation of the ComMod approach is to make models representing complex situations that all participants can understand. To reach this goal, they should all genuinely participate in their construction. In this experiment, the Role-Playing Game (RPG) which was built was very similar to its computerized MAS model so that the participants could understand what the simulator is doing when running a given scenario. This procedure also gives them the opportunity to criticize the model and to suggest improvements. For example, the participants requested themselves to modify the model to make them think about water management. Later on, all of them validated the representation of water in the model (“It is exactly like in reality!”), and some of them suggested some modifications in the

calibration of the model. Gradually, the model integrates their perceptions and preoccupations and becomes more familiar to them.

In some other ComMod experiments, the model was built from scratch during discussions with local stakeholders (D'Aquino, Le Page et al. 2003). In our case study, a first model was built based on the results of interviews, and presented to the local stakeholders and confronted to their perceptions through the RPG. One disadvantage of this procedure is that some participants might not dare to criticize such a model considered as “scientifically true”. In such a case, the continual nature of the process is important as the participants might need time to build their self-confidence before to question some of the model features or rules. But the advantage of this model building method is that it might facilitate the participation of the less powerful stakeholders in the construction of this tool, as it is usually difficult to get their opinion during classical group meetings because of their lack of communication skills and their public deference towards community leaders or representatives. As a woman said: “during the village meetings, they only speak, and I sleep. But in the game, I really think by myself.” Consequently, starting the collective process with the gaming sessions has an ice-breaking effect stimulating an interactive exchange of points of view.

Models highlight differences among stakeholders

This method of co-constuction will be all the more efficient to take social inequities into account that the RPG and the MAS models initially proposed by the researchers will make the existing differences among stakeholders more explicit and highlight their (open or potential) conflicts of interests. If the process had started with a classic group discussion, the powerful stakeholders with access to water would have said there was no water management problem. The first gaming session highlighting the differences among the participants was important for the problem of the less powerful to take central stage. It increased the collective awareness of the necessity to solve this problem, and triggered the start of exchanges about ways to tackle it. Several authors underline that classical participatory approaches often failed to tackle power relations because they overlook differences among people and try to reach consensus too fast (Wollenberg, Anderson et al. 2001).

Move on beyond the first apparent consensus

This experiment demonstrated twice how important it was to move beyond the first apparently reached consensus while facilitating the negotiation process (in the discussions about the kind of water infrastructures first, and then about the rules of allocation of water). This is because it usually reflects the interest of the most powerful players who dominate the discussions. This is especially important in Akha and Thai societies because of the respect for the social hierarchy. The participants always let the people with the higher social ranks speak first, and will not easily dare to contradict them.

Alternating individual interviews and group debates

The point made in the previous paragraph explains why it is important to conduct individual interviews beside plenary discussions to give more opportunities to the participants to express freely their own opinions about the topics under discussion, including in the absence of the most powerful participants. This is illustrated in this experiment by the numerous differences between the answers given by some participants during individual interviews and collective discussions. Typically, while in a collective session they would say that they had no water because they lacked the money to buy PVC pipes, in a one-on-one interview they would declare that it was because of the current implementation of the “first arrived first served” rule.

Continual and iterative nature of the process

As most conflicts are not solved in public but behind the scenes (Fisher and Ury 1981), the continual and iterative nature of the ComMod process (here the alternance of field and laboratory activities within the third cycle) is also a feature favouring the integrative accommodation of multiple interests. People continue to discuss between the formal participatory sessions, and the ComMod process accompanies the evolution of these discussions behind the scenes. In this experiment, if we had stopped the process after the single gaming workshop, we would have missed the following change in the agreed-upon rules for water allocation which was finally more favourable to the less powerful. Ramirez (2001) also points out that collective learning is a continual and iterative process, therefore requiring continual and iterative facilitating methods, although that is not easy to practice, especially under a time-limited project mode of operation.

Limits and perspectives for improvement

All these aspects allowed the usually voiceless people to participate in the elaboration of a new project at the village level. However, how far is this going to actually impact the life of this community? What perspectives of improvements did this experiment suggest?

How to involve “those who did not play the game”?

One main limitation of this ComMod process, also mentioned by the players, is that “those who played the game now think differently, in a more collective way, but those who did not play the game do not all think the same way”. This limits the potential impact of the ComMod process. Most of the players speak about what they have learned during the ComMod process to their relatives or neighbours. But as they say, “some of them understand, but some do not. They should play the game too.” However, it is difficult to organize gaming sessions with more than 15-20 participants, and it would be too costly to multiply the number of such gaming sessions. A first solution could be to make a very simple game that the villagers could play autonomously, but this relies on the commitment and training of a local facilitator (a villager or a local development worker) and beyond the difficulty to find such a person, it would raise a risk of manipulation of the process by this person. Another way could be to call whole village meetings after each gaming and simulation workshop to present and discuss its results. The challenge would be to find an interactive and accessible way to allow those who did not participate to understand as well as if they had themselves participated. It could be interesting to find a new way to combine the use of the RPG and MAS models for such a purpose.

How to better facilitate a bottom-up dialogue with higher institutional levels?

This ComMod experiment failed to stimulate a genuine bottom-up dialogue between the Mae Salaep villagers and their TAO President. In spite of her discourse on participation, she did not listen to the villagers when she was given the opportunity to do so. Because these officers are usually not yet ready to participate in a truly bottom-up dialogue, there is a need to train a new generation of local administrators mastering participatory approaches. In such a context, the ComMod approach could be further improved to facilitate such a dialogue across institutional levels. Greater efforts should be pursued to raise local officers' awareness of the ComMod process before it starts, which would require to better understand their own interest to participate (or not) in the process.

CONCLUSION

This experiment illustrates the importance of power relations in participatory water management processes and demonstrates that it is not always enough to put stakeholders

together around a table to stimulate the emergence of a sustainable and equitable solution to a water management conflict. This paper calls for a “critical” Companion Modelling paying attention to power relations, in which the initial socio-political system would be carefully analyzed to identify the main constraints towards democratic participation, and to adapt the ComMod process to mitigate them.

The main constraints to participatory decentralization based on the Tambon Administrative Organization identified along this process are threefolds:

- the lack of villagers awareness of the possibility to participate in decision-making, and their weak ability to do so, in particularly for the less powerful ones,
- the lack of downward accountability of the more powerful village representatives who do not easily take the diversity of interests in the community into account,
- the lack of truly bottom-up dialogue with TAO administrators.

The ComMod process succeeded in mitigating the first two constraints to a certain extent. The less powerful villagers were empowered through improved self-confidence and capacities, and through the creation of alliances leading to more accountability from the TAO village representative towards them at the end of the process. We identified some important methodological features which helped to level the playing field. Some of them are characteristic of the ComMod approach, such as the co-construction and use of tools that are within the reach of everyone, the use of models highlighting differences among people, a continual and iterative process to accompany the evolution of exchanges taking place behind the scene. We also highlighted the importance of other aspects which are not specific to the ComMod approach, but which were specific to the “critical” ComMod process which was implemented in this case study, like the careful selection of participants, the need to move beyond the first apparent consensus, and to let people express themselves during individual interviews beside group debates.

The role and management of power relations in a ComMod process is currently being debated among ComMod practitioners. Is it necessary to carry out a preliminary in-depth analysis of power relations? Is it possible to modify them along the process for the benefit of the majority? Is it legitimate for researchers to be involved in such processes? Should (and could) a facilitator be neutral? Should the facilitator find systematically a way to empower the more voiceless participants? In a word, should ComMod adopt a critical vision? As Faysse (2006) said, this probably mainly depends on the context. The more extensive the social inequities are, the more power relations will influence the process, and the more it will be necessary to analyze them and take them into account in a negotiation support process such as ComMod.

To some extent, this “critical” ComMod process succeeded in tackling two identified constraints to participatory decentralization at the community level, but the third one remains a challenge for the future: how to favour a genuine bottom-up dialogue with higher institutional levels? Are participatory processes like ComMod able and sufficient to create and reinforce such kind of dialogue? Or is it, like Argiros (2001) said, a deeper problem due to the hierarchical and non-participatory institutional culture of Thailand’s highly centralized bureaucracy? If Thailand really wants to implement decentralization and practice public participation, the training of a new generation of local administrators to master participatory approaches is seen as a priority. To support this, the positive outcomes of a few pilot participatory gaming and simulation experiments for democratic decentralization could serve as inspiring examples.

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