

Challenge Program on Water and Food

SIX MONTHLY PROGRESS REPORT 01/01/2008 to 30/06/2008

1. PROJECT PROFILE

PROJECT NO.: 25	PROJECT TITLE: Companion modeling for resilient water management: Stakeholders' perceptions of water dynamics and collective learning at the catchment scale	
LEAD CPWF THEME: 2	LEAD CPWF BENCHMARK BASIN: MEKONG	
SECONDARY CPWF THEME(S): 4	SECONDARY RIVER BASIN(S): Gange - Bramaputra	
MANAGING CENTER: CIAT	PROJECT DURATION: 3 years (+ 1 year extension at no cost requested in March 08)	

2. LINKED QUARTERLY PROGRESS REPORT (this section of the report are your milestone tables, embedded in an excel spreadsheet. One three monthly section per page. You are required to provide comments against your milestones in this report period)

This Six Monthly Progress Report is linked to:	CPWF-PN25 Quarterly Report Format_d07.xls (posted on 6 June 2008)
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3. SUMMARY OF ACHIEVEMENTS IN THIS SIX-MONTH PERIOD

(a) Technical elements:	
3.1. What are the project's main technical achievements in these six months?	<p><u>Activity 1.1: State of the art on knowledge acquisition & participatory modelling</u></p> <p>During the first semester of 2008, two seminars were held (on 17 January and 25 February respectively) in Bangkok with the project PhD students. The list of key references from the literature that was collectively discussed during the project technical workshop held in Koh Sichang in late November 2007 was updated and finalized. A common framework to analyze the selected references was also agreed upon. Each reference in the list is characterized by the type of article (R= review, M= methodology, CS= case study). A short comment explains why it is considered to be an important contribution, and indicates how the full text could be accessed.</p> <p>The framework to analyze the selected references is made of two parts: a general description (key problem, goals of the modelling process, methods and tools used, effects/outcomes of the process, what is generic? And what is original?), and a second one focusing on the process participants (degree, timing and modalities of involvement in the modelling process).</p> <p><u>Activity 1.2: Design and implementation of local models</u></p> <p>Below are the main technical achievements made during the review period at each of the project sites, from the lowest one in the Mekong delta to the highest in the Himalayan region:</p> <p>- <i>Bac Lieu province, Mekong delta, Vietnam (intensively farmed irrigated coastal area):</i> The prototype of an Agent-Based Model (ABM) was built with three main modules representing key spatial entities, rice & shrimp production entities, and household agents. The project PhD student (an</p>

	<p>agricultural economist at Cantho University) secured the help of a local computer specialist from the same university with support from Dr. C.T. Hoanh at IWMI. The Multi-Agent Systems (MAS) modelling work at this site is also technically supported by Dr. C. Le Page, MAS modeller and agro-ecologist based at Chulalongkorn University in Bangkok. Both of them make short trips to Cantho University.</p> <p>- <i>Lam Dome Yai watershed, Ubon Ratchathani province, lower northeast Thailand (rainfed lowlands):</i> Three successive participatory simulation field workshops were held with different types of collaborating rice growers in Ban Mak Mai village managing different types of farming households. Computer simulations are now used to continue the co-designing, improvement, and validation of the PhD student's ABM (named BanMakMai or BMM model). The February meeting focused on refining the representation in the model of decisions linked to farming practices, and the March workshop examined the farmers' labor management practices, particularly those related to the choice between on-farm and off-farm employment. An almost final version of the BMM model was validated by the participating farmers in May. Its use for scenario exploration started after farmers said that now the BMM model sufficiently represents their system. Two scenarios looking at the interactions between water and labor availability and use were identified during the last field workshop. In parallel with these ABM co-designing and validation tasks, the analysis of the effects of these collaborative modeling activities on the three main kinds of participating rice farmers continued with a female Master student from the Faculty of Agriculture at Ubon Ratchathani University. A full report on the evaluation of the Companion Modeling (ComMod) effects in this case study will be produced and her MSc dissertation will be written and submitted during the next review period.</p> <p>- <i>Doi Tiew site in the upper watershed of Nan province, northern Thailand (rainfed uplands):</i> At the catchment level, the analysis of land-use and land-cover change (LUCC) during the past 30 years was completed to understand the recent agrarian system dynamics and the current conflicting situation between local Hmong farmers / herders and the government agencies in charge of natural resource conservation. Chronological series of aerial photos and satellite images were analyzed to produce several complementary maps to display and quantify land-use change at the project site. Interviews were conducted with key local informants to analyze the successive land-use changes observed on the maps. At the farming household level, more than 30 key stakeholders (different kinds of farming units and the village headman) were interviewed repetitively to understand the structure and functioning of their production systems, as well as their different points of view regarding the cattle grazing in the forest issue. The emphasis was on the analysis of their extensive cattle raising practices and their impact on forest regeneration in the upper catchment. This information will be further processed to build a farmer typology during the next review period. Later on, these main types of farms will be represented as physical or virtual agents in role-playing games (RPG) and the subsequent ABM to be gradually built with the villagers. At the field level, the ecological survey on vegetation dynamics as affected by cattle grazing and forest regeneration efforts in this upper catchment continued in the dry season with the gathering of new data from sampling plots in different land-use types.</p> <p>- <i>Mae Hae catchment in Chiang Mai province, northern Thailand (partly irrigated uplands):</i> The Mae Hae ABM was modified to better represent individual characteristics and insights on farmland and water management processes at the landscape level. The representation of the process of disseminating information among the 14 villages of the local network dealing with a common land-forest-water management problem between upstream and downstream communities was also improved. The current version of the Mae Hae model represents decision-making procedures at both individual and group levels, and each level can affect the other one. Knowledge on these important elements and communication procedures were synthesized from previous RPG sessions, field workshops held by the project, and other collaborative activities among stakeholders. Alternative land-forest-water management scenarios were also developed and simulated in the ABM to analyze and compare their outcomes in term of crop success & failure, individual incomes, and water availability. The scenario simulations run with the ABM provide ranges of outputs regarding farm production (individual benefit & loss), forest area, and water availability, which determine watershed resource vulnerability. This tool can be used to explore the possible effects of a water management agreement coming out of the negotiation. This will allow stakeholders to analyse trade-off, adjust their propositions, and propose further management options and pathways to achieve a more coordinated and resilient type of renewable resource management in the future. During the review period, the local stakeholders continued their negotiation process among upstream and downstream water users. After two rounds of negotiations, witnessed by local government officers, an agreement on limiting the number and size of water conveyance pipe in the catchment was reached.</p>
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	<p>- <i>Mae Salaep catchment in Chiang Rai province, upper northern Thailand (partly irrigated uplands) and Nam Haen catchment in Nan province (rainfed uplands):</i> Field work and participatory simulations are already completed at these 2 sites. The ABM representing water management used in the third and final ComMod cycle in Mae Salaep and the gaming simulator used in Nam Haen to look at NTFPs management were described, as well as their use with farmers, in the French PhD student thesis successfully defended at Paris X University on 6 May 2008.</p> <p>- <i>Lingmuteychu (irrigated highlands) and Kengkhar (rainfed highlands) sites in West-Central and Eastern Bhutan:</i> In January 2008, the so-called "Seven villages" generic ABM for irrigation water sharing between upstream and downstream communities was presented to the local rice growers in each of the seven villages of the Lingmuteychu catchment. This task was autonomously completed by the Bhutanese team of researchers and extension workers. Comments and suggestions for further improvements of this tool and its use with local villagers were gathered. At the more recent Kengkhar village site in Mongar District, Eastern Bhutan (one of the most remote and water scarce village of the region), the construction of seven interconnected tanks was completed during the first quarter of the year to collect spring water and establish an efficient network of tanks in this community. Initially, only five tanks were planned to be built, but the villagers, especially women who are most affected by the drudgery of carrying water from the springs to their homes, insisted to have two other springs also connected to this water distribution system. It is used to provide water for domestic use, gardening, and animal rearing. This activity stimulated the mobilization of the community before a first gaming workshop held in the village in late April 2008 to explore with the villagers the use of this new water storage and distribution system to mitigate water scarcity at the village level. The features and rules of the RPG used in his first workshop will be implemented in a similar prototype gaming simulator to be used to further explore water management rules with the villagers in a more time efficient way.</p> <p>In summary, project ABMs or gaming simulators are now available for the older sites (Mae Salaep in Chiang Rai, Nam Haen in Nan, and Lingmuteychu in Bhutan), are being finalized at other sites (Mae Hae in Chiang Mai, Lam Dome Yai in Ubon), or are still under construction at the remaining more recent sites (Bac Lieu in the Mekong delta - Vietnam, Doi Tiew in Nan, Kengkhar in Eastern Bhutan).</p> <p><u>Activity 1.3: Synthesis on models</u></p> <p>After several rounds of discussions and reviews of the different models, either fully computer-based ABMs, role playing games (RPGs), or hybrid simulators, developed under the set of PN25 case studies, a template to describe and compare these various models was designed with three parts:</p> <ul style="list-style-type: none"> - Spatial interface; - Static description: a simple UML class diagram, and a table with the model main attributes; - Dynamic description: a tabulated list of processes with their related main assumptions, time and space calculation step, and a diagram displaying the flows among the various modelled processes, such as an activity swim lane figure, or sequence or flow diagrams. <p>A short paper comparing the models produced by 8 of the project cases studies was prepared during this review period, and submitted to the IFWF2 organizing committee in late June 2008.</p> <p><u>Activity 2.1. On-the-job training of local resource managers</u></p> <ul style="list-style-type: none"> - The usual on-the-job training activities based on the organization and implementation of collaborative modelling field workshops at the project sites continued during this review period at the Lam Dome Yai, Ubon Ratchathani, Northeast Thailand (with the introduction of participatory simulations after several previous workshops using gaming tools) and Kengkhar, Eastern Bhutan sites (where Kengkhar-based extension workers were trained in using RPGs with villagers in April 2008). - On 24-26 March, the project activities on collective management of upper catchments at the Nam Haen and Doi Tiew sites in Nan Province were presented to the staff of the local Rajamangala University during a workshop on a strategic plan for the management of Nan watershed. - The project leader and three PN25 PhD students presented 4 communications the project activities during the fourth National Agricultural Systems Conference "Agriculture for Community and Environment Ready to Handle Climate Change" held in Chiang Mai, Thailand, on 27-28 May 2008. <p><u>Activity 2.2. Degree training</u></p> <ul style="list-style-type: none"> - Our main research collaborator at <i>Lingmuteychu site</i> in West central Bhutan, Mr. Aita Kumar Bhuiyel, was able to secure his permission from the Bhutanese authorities to travel to Thailand in order to attend a one year diploma training program at Kasetsart University in Bangkok. This program of study will be
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	<p>combined with an internship at the CU-Cirad ComMod Project, Chulalongkorn University to strengthen the linkages between the Bhutanese and Thai research sites of PN25. Mr. Aita will arrive in Bangkok in July 2008.</p> <ul style="list-style-type: none"> - The project female M.Sc. student at the Faculty of Agriculture at Ubon Ratchathani University, Ms. Manitchara Thongnoi who is doing her research on the evaluation of Companion Modeling (ComMod) diverse effects on participating farmers at the <i>Lam Dome Yai, Ubon Ratchathani site</i> completed her monitoring activities and series of interviews with the collaborating farmers during this review period. She will now focus on data synthesis and dissertation writing to be completed in the next review period. - <i>Bac Lieu site</i>: Mr. Le Canh Dung from Cantho University made a successful defence of his PhD thesis proposal at Faculty of Science of Chulalongkorn University, Thailand in January 2008 before to return to Vietnam. He also produced a manuscript for a short article submitted to IFWF2 by 30 June, 2008. - <i>Lam Dome Yai, Ubon Ratchathani site</i>: Mr. Warong Naivinit and Ms. Manitchara Thongnoi, prepared the full text of an oral communication to be presented at the World Water Congress in Montpellier, France during 1-4 September 2008, focusing on the effects of the ComMod process on its different kinds of participants. W. Naivinit presented an oral communication in Thai on this case study at the fourth National Agricultural Systems Conference "Agriculture for Community and Environment Ready to Handle Climate Change" on 27-28 May 2008 in Chiang Mai. And he also produced a short article describing his ABM model submitted to IFWF2 in late June, 2008. <p>Mr. Warong Naivinit and Ms. Manitchara Thongnoi were also the main organizers of the PN25 technical workshop held near their research site in Ubon Ratchathani province during 8-13 June 2008.</p> <ul style="list-style-type: none"> - Mr. Pongchai Dumrongrojwattana from the Faculty of Science made a successful defence of his PhD thesis proposal on his research at the <i>Doi Tiew site in Nan province, Northern Thailand</i> at Chulalongkorn University in Bangkok in January 2008. He also presented an oral communication in Thai on this case study at the fourth National Agricultural Systems Conference "Agriculture for Community and Environment Ready to Handle Climate Change" on 27-28 May 2008 in Chiang Mai. - <i>Mae Hae site in Chiang Mai province, Northern Thailand</i>: Mr. Panomsak Promburom wrote an article submitted for publication in a special issue of the Environment and Modelling Software journal. He presented an oral communication in Thai on this case study at the fourth National Agricultural Systems Conference "Agriculture for Community and Environment Ready to Handle Climate Change" on 27-28 May 2008 in Chiang Mai. And he also produced a short article on the use of RPGs and institutional engagement for modeling land and water management at his research site submitted to IFWF2 in late June, 2008. - <i>Mae Salaep, Chiang Rai province & Nam Haen, Nan province sites</i>: Mrs. Cécile Barnaud successfully defended her PhD dissertation at Paris X University on 6 May 2008 and received the unanimous "congratulations" of the jury. Her journal article on the preliminary diagnosis on the Nam Haen agricultural system and resource management problems in Nan province was published in Southeast Asian Studies journal at Kyoto University in March 2008. She also produced a short article on the use of interactive models in ComMod processes submitted to IFWF2 in late June, 2008. - <i>Lingmuteychu site in West central Bhutan</i>: Mr. Tayan Raj Gurung produced a Most Significant Story on the "Making of a watershed management committee" at this site through a series of ComMod activities implemented in recent years, that was submitted to CPWF in late June 2008. <p><u>Activity 3.1. Lessons from past experiments at key sites</u></p> <ul style="list-style-type: none"> - Dr. Chu Thai Hoanh from IWMI led a first comparative analysis of the project different kinds of models produced at 8 sites and the related preparation (with a dozen of co-authors) of a cross sites short article submitted to IFWF2 in late June, 2008 titled "Agent-based modelling to facilitate resilient water management in Southeast and South Asia". - Similarly, Mr. Tayan Raj Gurung, Director of Wengkharr RNR-RC under the Ministry of Agriculture, Bhutan, led 6 other co-authors in a first comparative analysis of the effects generated by ComMod processes at 5 different project sites in Bhutan and Thailand. This also led to the preparation of a short article submitted to IFWF2 in late June, 2008 and titled "Effects of Companion Modeling on Water Management: Comparative analysis across five sites in Bhutan and Thailand". - To facilitate the communication between PN25 teams working at different geographic site, the project website hosted on Chulalongkorn University server was further improved during the review period (see at www.cpwf25.sc.chula.ac.th) thanks to Mrs. Anuttara Tianvorakoon, who is receiving financial support from the Agropolis Montpellier-based Echel Eau project during this year. The main menu (The project, news, partners, set of maps allowing to access documents on research activities at each project site, a photo gallery per site, training activities / PhD students, publications, resources, contact and file exchange system for project partners). <p><u>Activity 3.2. Monitoring, analysis, and data synthesis at study sites</u></p>
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	<p>- Following the production in 2007 of 2 reports on the monitoring and evaluation of the effects of ComMod collaborative modelling processes implemented at the pioneer Mae Salaep and Nam Haen sites in Northern Thailand, the preparation of journal articles on this topic has started in cooperation with the Communication and Innovation Group at Wageningen University (CIS-WUR), Netherlands. An oral communication drawing on the Mae Salaep case study and titled "Rethinking participatory action research in renewable resource management: Companion Modelling in Mae Salaep, Northern Thailand" was presented by Annemarie van Paassen from CIS-WUR at the IAMCR Conference on participatory communication research in Stockholm in June 2008.</p> <p>- A similar M&E report focusing on the Lam Dome Yai, Ubon Ratchathani case is being assembled based on Ms. Manitchara Thongnoi's findings to be reported in details in her Master thesis to be defended at the Faculty of Agriculture, Ubon Ratchathani University in late 2008.</p> <p><u>Activity 3.3. Participatory workshops at key sites</u></p> <p>At this advanced stage of the project, regular ComMod field workshops with 20-30 participants and relying mainly on RPG tools are still held but only at the most recently opened sites (like in Kengkhar, Eastern Bhutan, in April 2008). But at this advanced stage of the project, there are more (and smaller) village participatory simulation sessions with collaborative farmers and other stakeholders to improve and validate ABMs, and finally to explore future scenarios with them (like at the Mae Hae site in Chiang Mai, Northern Thailand & Lam Dome Yai site in Northeast Thailand in February, March and May 2008).</p>
<p>3.2. How will these findings contribute to the project?</p>	<p><u>Activity 1.1: State of the art on knowledge acquisition & participatory modelling</u></p> <p>By comparing different schools of thought & frames of mind with the ComMod collaborative modeling approach and its tools, a collective improvement of knowledge on the subject across the whole project team is expected. To favour this, earlier in the project, we decided to have a project level collective organization to implement this activity in a way that will maximize its benefits for PN25 PhD students as they will use its outputs in the writing of the first chapters of their theses and in the preparation of manuscripts for journal articles.</p> <p><u>Activity 1.2: Design and implementation of local models</u></p> <p>This activity is really at the core of the project 3 objectives. By using a common collaborative modelling approach and similar methodologies in different staggered ecoregional zones of the main basin, we are producing different types of modelling processes, models, and effects on participating stakeholders to be used in comparative analyses during the last year of the project.</p> <p>Tools and methodologies for better water and land management in different social-ecosystems are being developed, tested, and their effects evaluated.</p> <p>Teams of young scientists and development workers are being trained in collaborative modelling and action research processes, methodologies, and tools at each site.</p> <p>At each location, concrete water management issues are examined with the different concerned parties in order to reach a collective assessment of the current situation, a common understanding of the issue at stake, and to identify acceptable future scenarios leading to agreed upon action plans.</p> <p>This activity contributes to harness greater people participation in collective planning and action following the stimulation of communication among the concerned stakeholders, and the acquisition and sharing of new knowledge.</p> <p>More specifically, at the Kengkhar site in Eastern Bhutan, beyond mobilizing the community for better spring water management, the recent activities lead to increased water availability and reduced time in water collection, especially for local women.</p> <p><u>Activity 1.3: Synthesis on models</u></p> <p>The common framework established to analyze the characteristics of the different kinds of models developed by the project teams at their respective sites is being used by PN25 PhD students to describe their models and case studies. Later on, these similar descriptions will be subjected to a comparative analysis led by the project modellers.</p> <p><u>Activity 2.1. On-the-job training of local resource managers</u></p> <p>At most of the project sites, local resource managers are associated in the preparation, implementation, and evaluation of the project activities. They are discovering and experiencing a new way of working on common water management issues with the people. Some of them (like Mr. Aita Kumar Bhujyel and Gyenbo Dorji in Bhutan) have decided to enrol in postgraduate diploma degree training programs to</p>

	<p>further improve their knowledge and skills in this field. As the project approaches its final phase and doctorate students return to their respective regional universities, there will be more training of local resource managers activities conducted directly from their faculties in the future.</p> <p><u>Activity 2.2. Degree training</u></p> <p>Teams of young scientists and development workers are being trained in collaborative modeling and action research processes, their concepts, methodologies, and tools. They are also communicating among them to strengthen a regional network of ComMod users, and most of them have already registered to become members of the ComMod international scientific network.</p> <p><u>Activity 3.1. Lessons from past experiments at key sites</u></p> <p>We have already made the first steps toward full comparative analyses of the research findings at the various project sites. Particularly regarding the description of the models and the effects of the collaborative modelling processes developed at different locations. The project website is also being gradually improved to deposit the various products of the project and to disseminate them.</p> <p><u>Activity 3.2. Monitoring, analysis, and data synthesis at study sites</u></p> <p>This activity is crucial to be able to explain what worked, where, and why? And also what failed to deliver the expected outputs, and why at other sites? The compared analysis of these findings will lead to improved guidelines for the use of ComMod for collective water management in the future.</p> <p><u>Activity 3.3. Participatory workshops at key sites</u></p> <p>Filed workshops are key events in any ComMod processes. But as the project advances, their contents evolve from gaming and simulation activities based on RPGs to improve communication, to share knowledge and perceptions, and to better understand the water management issue being examined, toward participatory simulation sessions aiming at the improvement and validation of the ABMs and, finally, their use for the collective assessment of possible future scenarios of water use and management.</p>
<p>3.3. What is the stakeholder uptake of these findings? Provide evidence to justify your answer.</p>	<p>All the project field activities at each site are planned and implemented with the concerned stakeholders.</p> <p>More stakeholders are getting interested in the project activities:</p> <ul style="list-style-type: none"> - The project was invited to present a paper titled "Companion Modelling for Resilient and Adaptive Agrarian Social-Ecosystems in Asia" and to take part in a panel discussion on new approaches to agricultural systems at the fourth National Agricultural Systems Conference "Agriculture for Community and Environment Ready to Handle Climate Change" held in Chiang Mai on 27-28 May 2008. - At this conference, the project received an invitation to introduce the ComMod approach at the Faculty of Natural Resources of Prince of Songkla University (FNR-PSU) in Southern Thailand. - In April 2008, we project was invited to give two lectures on ComMod for conflict resolution in NRM at the Faculty of political sciences, Chulalongkorn University. Two case studies from PN25 were used. - In Chiang Mai, in early 2008, the government SME project showed interest in the ComMod approach. - IFAD selected the Lingmutyechu case study on the use of ComMod and games for negotiating irrigation water sharing to be considered by the committee preparing its Rural Poverty Report. This case study and the Mae Salaep one will be presented in a new book titled "Negotiate" to be published by IUCN. - Some of the modelling tools produced by the project are regularly used for teaching purposes at several universities in Asia and Europe. <p>Evidence from the project sites:</p> <ul style="list-style-type: none"> - At the Mae Hae site, the collective negotiation effort among the different parties continued during this period without any direct facilitation or intervention by the research team. This demonstrates a change in their perception and awareness of the problem, and improvement in their capacity for collective action which are related to the effects of the previous ComMod processes. At the same site, a local organization asked the project to use its approach and tools to look into a new land-use problem. - At the Lam Dome Yai site in northeast Thailand, the ABM model is seen as an interactive communication tool for knowledge-sharing and collective discussion among stakeholders. On 11 June, during the recent PN25 technical workshop, three representatives of the participating farmers used the BMM model in their village for knowledge-exchange between them and a dozen of visiting PN25

	<p>scientists working at the various project sites. This activity was organized to determine how far the local farmers were confident and able to describe “their” BMM model, discuss its features, and use this tool for communicating about their rice farming and labor management practices with all PN25 site coordinators.</p> <ul style="list-style-type: none"> - In Lingmuteychu, West Central Bhutan, following the past project activities, there is at least one check dam constructed in all villages to store water, irrigation canal were restored and 5 acres of paddy fields are back to cultivation. - At Kengkhar site, people have contributed almost half of the cost of the new 7 water storage tanks and which collect water from springs and started to use them. This network of water tanks is working as lower tanks are getting filled up and households from downstream hamlets now meet their water requirement from them. - During his trip to Bhutan in late April 2008, the project leader was told by the Director of the Council for Research on Renewable Resources (CoRRB) of the Ministry of Agriculture (the PN25 main institutional partner in Bhutan) that time has come for “up scaling the ComMod approach” in the country. - In summary, the analysis of the various kinds of effects generated by the project collaborative modeling processes on their participating stakeholders show individual and collective changes about awareness of the problem at stake, learning (knowledge acquisition and exchange), changes in communication (extended social networks) and perceptions, decision-making, behavior, and even practices when the ComMod process has been going on for quite some time already.
(b) Project Management elements:	
3.4. How is the project contributing to the CPWF’s main research themes?	<p>This project is developing and testing an innovative approach and methodologies for integrated catchment management with various users. The field activities bring together different types of stakeholders (researchers being one category among others) to exchange information and knowledge from different disciplines and sources (indigenous, expert, scientific) and participate in collective learning activities facilitated by researchers.</p> <p>These exchanges are mediated by models, presented as RPGs or computerized ABMs, used to run multi-agent simulations based on selected scenarios of the future identified by the stakeholders, and jointly assessed with them.</p> <p>These collaborative modeling processes lead to new orientations and coordination mechanisms for the catchment type of (hopefully more negotiated and adaptive) management, and eventually to institutional or technical change and collective action.</p> <p>A particular strength of PN25 is its training and capacity building component, especially thanks to six PhD students.</p>
3.5. Is the project following the principles of CPWF research? *	<p>Yes, we think so, as the project activities are taking an integrated natural resources management framework, are pro-active towards stakeholder integration, particularly the “voiceless” ones, and are based on equal gender participation and equitable water sharing.</p> <p>The project also manages a specific set of activities aiming at the assessment of the effects and impact of its activities at several key sites.</p>
3.6. Any problems or constraints - deviations - in the past six months?	<ul style="list-style-type: none"> - Bac Lieu site: lack of new funding/payment did not allow new field activities during this review period, but this constraint was managed by putting the emphasis on in the lab. modelling activities. - Mae Hae site: no deviation regarding the construction of the MAS model and scenarios simulation, but reaching a collective agreement on resource management by multiple stakeholders is a very time consuming process, that is gradually adapted and adjusted, and thus cannot be definitely planned in a rigid timeframe. - Bhutan sites: All as scheduled, except that Mr. Aita Kumar Bhujyel’s enrolment in Kasetsart University for PG Diploma has been delayed to July 2008. - Following the last technical workshop held in Thailand in late 2007, we have requested a one year extension of the project, at no cost for the CPWF, until 31 December 2009. A letter explaining the reasons for this request was sent to CPWF on 28 March 2008. We are waiting for CPWF formal decision regarding this request, and for an agreement on the implications of this extension on the implementation of the project activities during its last year.

* Pro-poor, gender equitable, in an integrated natural resources management framework, pro-active towards stakeholder integration and focused on impact.

4. SUMMARY OF OUTPUTS

SUMMARY OF OUTPUTS THIS PERIOD	
Nature of Output	Details
Cross-sites: commented list of key references on participatory modelling and a framework to analyse case studies (Excel file)	Available on the project website.
Bac Lieu site: An ABM prototype model	First version of the agent-based model with 3 modules (spatial entities, rice & shrimp productions, and household agent) built following previous gaming & simulation activities.
Bac Lieu site: Two manuscripts of short articles submitted to IFWF2	One paper for oral presentation and another one on a poster. Submitted to IFWF2 on 30 June, 2008: Agent-based modeling and simulation of integrated rice-shrimp farming in Bac Lieu province, Mekong delta, Vietnam, by Le Canh Dung, Chu Thai Hoanh, Christophe Le Page, and Nantana Gajaseni.
Bac Lieu site: Le Canh Dung PhD proposal defended & passed	Detailed research proposal passed after its defence in the Agro-technology international PhD program at the faculty of science of Chulalongkorn University, Bangkok.
Lam Dome Yai site: Three participatory simulation workshops completed	Organized on 5-6 February, 19-20 March, and 13-14 May 2008 with project members W. Naivinit, M. Thongnoi, G. Trébuil, and C. Le Page. A workshop report is available.
Lam Dome Yai site: BanMakMai (BMM) agent-based model finalized	A computer ABM developed under CORMAS platform to represent the interaction between land & water use and labour management on different types of rice farms. Available on request.
Lam Dome Yai site: Rice farmers from Ban Mak Mai village, Det Udom District, Ubon Ratchathani Province, showed the BMM model to PN25 researchers from all sites	Meeting held in their village on 11 June 2008 during the PN25 technical workshop in Ubon. All site coordinators from Thailand, Bhutan, Vietnam, and France participated in the event. Ban Mak Mai farmers introduced the ABM designed with them to the visiting researchers and discussed its features and rules.
Lam Dome Yai site: oral communication made at a national agricultural systems conference in Thailand	Naivinit W., Le Page C., Thongnoi M., and G. Trébuil. 2008. Collaborative modeling to represent interaction between water and labor availability in lower northeast Thailand. In: Proceedings of the 4 th National Agricultural Systems Conference "Agriculture for Community and Environment Ready to Handle Climate Change" on 27-28 May 2008, Chiang Mai.161-170 (in Thai).
Lam Dome Yai site: manuscript of a short article submitted to IFWF2	Naivinit W., Le Page C., Thongnoi M., and G. Trébuil. 2008. Agent-based modeling of the interaction between water and labor availability in the rainfed rice ecosystem of Northeast Thailand. 4p. Submitted to IFWF2 on 30 June, 2008.
Lam Dome Yai site: conference paper to be presented at the World Water Congress in Montpellier, France on 1-4 September 2008	Naivinit W., Trébuil G., Thongnoi M., and C. Le Page. 2008. Collaborative Multi-Agent Modelling to Improve Farmers' Adaptive Capacity to Manage Water and Migrations Dynamics in Northeast Thailand. 15p. Submitted on 30 April 2008.
Doi Tiew site in Nan: 1 set of maps on land-use and land cover change	Several maps illustrate the land-use and land-cover changes in the study area. The will illustrate the manuscript of a journal article paper to be prepared later on.
Nam Haen site in Nan: oral communication made at a national agricultural systems conference in Thailand	Dumrongrojwathana, P., Barnaud, C., Gajaseni, N., and G. Trébuil. 2008. Area Study and Companion Modelling to Integrate Multiple Interests in Upper Nan Watershed. In: Proceedings of the 4 th National Agricultural System Seminar. The Empress international conference hall, Chiang Mai, Thailand. 27-28 May 2008. 371-378 (in Thai).
Mae Salaep, Chiang Rai & Nam Haen, Nan sites: Mrs. Cécile Barnaud's PhD thesis defended at Paris X University	Mrs. Cécile Barnaud defended her PhD dissertation (in French) on the following topic on 6 May 2008 at Paris X University: "Equity, power games and legitimacy: Dilemmas of concerted management of renewable resources. Testing a critical companion approach in two agrarian systems of Northern Thailand highlands". 408 p.
Mae Salaep, Chiang Rai site: oral communication made at an international conference on participatory communication research	Van Paassen A., Barnaud C., and I. Patamadit. 2008. Rethinking participatory action research in renewable resource management: Companion Modelling in Mae Salaep, Northern Thailand. In: Proceedings of the IAMCR June 2008 Conference, Stockholm, Sweden. 11p.

Mae Salaep, Chiang Rai site: manuscript of a short article submitted to IFWF2	Barnaud C., Promburom P., Trébuil G., and F. Bousquet. 2008. Interactive models to catalyze collective water management: a companion modeling approach in northern Thailand. 6p. Submitted to IFWF2 on 30 June, 2008.
Mae Salaep, Chiang Rai site: journal article published in "Economie Rurale", France	Barnaud C., Trébuil G., Promburom P., and Bousquet F. 2008. La modélisation d'accompagnement pour une gestion concertée des ressources renouvelables en Thaïlande (Companion modelling for concerted management of renewable resources in Thailand). In: <i>Economie rurale</i> , 303-305: 39-59.
Nam Haen, Nan site: journal article published in Southeast Asian Studies, Kyoto University, Japan	Barnaud C., Trébuil G., Dumrongrojwathana P., and Marie J. 2008. Area Study Prior to Companion Modelling to Integrate Multiple Interests in Upper Watershed Management of Northern Thailand. In: <i>Tonan Ajia Kenkyu (Southeast Asian Studies)</i> , Kyoto University, Japan, 45(4): 559-585.
Mae Hae site: Stakeholders' agreement on new rule for water use, May 2008	Result of two rounds of negotiations organized by the stakeholders themselves. Report based on personal communication during visit made at the site in June 2008. Project member: Panomsak Promburom.
Mae Hae site: an integrated watershed management model	This ABM was developed by and is available from P. Promburom and F. Bousquet. This ABM was used to run simulations presented and analyzed in the journal article listed below.
Mae Hae site: article accepted in a special issue on "Modeling with stakeholders" of Environmental Modelling & Software journal	Promburom, P., and F. Bousquet. 2008. Combining role-playing game and multi-agent system modelling for mutual and collective understanding of complex socio-ecological system in a watershed of northern Thailand. Accepted in <i>Environmental Modelling and Software</i> journal. This article is under revision.
Mae Hae site: oral communication made at a national agricultural systems conference in Thailand	Promburom P. 2008. Combining Role-playing games, scenario visioning and MAS modelling to build a simulation model of a northern Thailand watershed. In: <i>Proceedings of the 4th National Agricultural System Seminar</i> . The Empress international conference hall, Chiang Mai, Thailand. 27-28 May 2008. 379-386 (in Thai).
Mae Hae site: manuscript of a short article submitted to IFWF2	Promburom P. and F. Bousquet. 2008. Role-playing games and institutional engagement for modeling land and water management in a northern Thailand watershed. 4p. Submitted to IFWF2 on 30 June, 2008.
Lingmuteychu site, Bhutan: series of field workshops in 7 villages to introduce the "Seven Villages" ABM, January 2008	The generic "Seven villages" ABM for irrigation water sharing was presented to local rice growers in each village by the Bhutanese team of researchers and extension workers in order to gather their suggestions for further improvements of this tool and its use.
Lingmuteychu site, Bhutan: Most Significant Story titled "Making of a watershed management committee" submitted to CPWF	Mr. Tayan Raj Gurung prepared a Most Significant Story titled "Making of a watershed management committee", following the completion of a series of ComMod activities at this site in recent years, that was submitted to CPWF in late June 2008.
Kengkhar site, Bhutan: a network of seven water collection tanks built during January-March 2008	Seven concrete tanks were constructed to collect water from springs. 5 out of 7 tanks are connected with pipes to allow water collected above a certain capacity of tank to flow into a lower tank.
Kengkhar site, Bhutan: 1 st gaming simulation field workshop held on 24-26 April 2008	18 randomly selected farmers participated in RPG sessions and reported to have learnt on the need and options to share scarce water, management of catchment, community mobilization, and prioritizing water use to better manage spring pond.
Project leader presented the project approach and a case study at a national agricultural systems conference in Thailand	Trébuil G. on behalf of the ComMod Group. 2008. Companion Modelling for Resilient and Adaptive Social Agro-Ecological Systems in Asia. Invited paper. In: <i>Proceedings of the fourth National Agricultural Systems Conference "Agriculture for Community and Environment Ready to Handle Climate Change"</i> , 27-28 May 2008, Empress Hotel, Chiang Mai, Thailand. 90-104.
Cross-sites: a collective short article comparing the models of 8 PN25 case studies submitted to IFWF2	C.T. Hoanh, C.L. Page, O. Barreteau, Guy Trébuil, F. Bousquet, F. Cernesson, C. Barnaud, T.R. Gurung, P. Promburom, W. Naivinit, L.C. Dung, P. Dumrongrojwathana and M. Thongnoi. 2008. Agent-based modeling to facilitate resilient water management in Southeast and South Asia. 4p. Submitted to IFWF2 on 30 June, 2008.
Cross-sites: a joint short article comparing the effects of 5 PN25 ComMod participatory modelling processes in Thailand and Bhutan submitted to IFWF2	Gurung T.R., Promburom P., Naivinit W., Thongnoi M., Barnaud C., and Trébuil G. 2008. Effects of Companion Modeling on Water Management: Comparative analysis across five sites in Bhutan and Thailand. 4p. Submitted to IFWF2 on 30 June, 2008.
Project website improved during the period	(see at www.cpwf25.sc.chula.ac.th)

SUMMARY OF OUTPUTS EXPECTED IN NEXT PERIOD	
Nature of Output	Details
Bac Lieu site: an improved version of the ABM presented to rice & shrimp growers	To include the representation of more agents / stakeholders and more interactions among them built in the model. To be used in participatory simulation sessions to better understand their decision-making by running scenarios.
Lam Dome Yai site: Ban Mak Mai rice farmers to present the ABM to master students & staff at Ubon Rajathanee University	On 18 October, the project collaborating farmers from Ban Mak Mai village will present the ABM they helped to design to the master students & lecturers-researchers of the computer applications in agriculture program at the Faculty of Agriculture, Ubon Rajathanee University. They will also discuss how such a tool could be used to exchange their knowledge with scientists.
Lam Dome Yai site: Mr. Warong Naivinit's PhD dissertation completed and defended at Chulalongkorn University, Bangkok	W. Naivinit's defense of a thesis tentatively titled "Companion modelling to understand interactions between land & water use, and labour migration in lower northeast Thailand" is planned for 15 December 2008.
Lam Dome Yai site: Ms. Manitchara Thongnoi's M.Sc. thesis completed and defended at Ubon Rajathanee University	Manitchara Thongnoi's defense of a thesis tentatively titled "Assessment of the Effects of Companion Modeling for Integrated Labor, Land & Water Management in the Lam Dome Yai Watershed, Ubon Ratchathani Province" is planned for the end of the year.
Lam Dome Yai site: preparation of 2 new journal articles	One on the collaborative ComMod process is planned for submission to Tonan Ajia Kenkyu (Southeast Asian Studies) journal of Kyoto University, Japan, and the other one focusing on the ABM and simulations to be submitted to Simulation & Gaming journal.
Doi Tiew site in Nan: preparation of a new journal article	A manuscript will be prepared on the land-use and land-cover changes at this study site for submission to a peer-reviewed journal in geography.
Doi Tiew site in Nan: analysis of decision making and practices for cattle raising	In July-August, the cattle raising systems will be analyzed, and the farmer typology will be built based on differences in means of production and farmers objectives & strategies.
Doi Tiew site in Nan: modeling relationship between above-ground biomass dynamics and cattle grazing	In August, a state transition diagram on the relationships and dynamics between above-ground biomass and cattle grazing will be produced based on the results of the on-going field survey on vegetation dynamics and stakeholders' interviews.
Doi Tiew site in Nan: 1 st series of gaming field workshops with stakeholders	In early September, the stakeholders will be asked to validate the model of vegetation dynamics prepared by the research team. In late September, both herders and foresters will be invited to role-playing session to verify and improve the researchers' conceptual model and to enrich their understanding. A third field workshop is planned for early December 2008.
Mae Salaep, Chiang Rai & Nam Haen, Nan sites: research report & 2 new journal articles	A research report based on the Mae Salaep case study will be submitted to CPWF. An article based on this case study is under preparation to be submitted to the Journal of International Agricultural Education and Extension (WUR, NL). Another journal article on water management modelling at Mae Salaep site will be prepared for submission to Water Policy journal.
Mae Hae site: More scenarios simulation and analysis of results	Some scenarios will be selected to do sensitivity and trade-off analysis.
Mae Hae site: EMS journal article finalized for special issue on "Modeling with stakeholders"	By P. Promburom and F. Bousquet (see above).
Mae Hae site: Two new journal papers produced	They would be submitted to journals such as Ecology Society, Agricultural Systems, or Journal of Artificial Societies & Social Simulation
Mae Hae site: Completion of Ph.D thesis and defence at Lyon I University, France	Thesis will be based on accepted journal articles and other complementary chapters, and defended at Lyon University in December 2008.
Lingmuteychu site, Bhutan: Finalization of the "seven villages" ABM	The final "seven villages" ABM will be presented to the watershed management committee for any further use.
Kengkhar site, Bhutan: Validation and finalization of ABM based on Kengkhar RPG	The ABM will be constructed in collaboration with CIRAD modeller. A 2nd participatory workshop using the ABM will be organized in Kengkhar, incorporating the suggestions made during the 1 st April 2008 gaming workshop.
Kengkhar site, Bhutan: exploration of the complementary rainwater harvesting option	Further involvement of community to better manage catchment and to restore water: an attempt will be made to try rainwater harvesting to supplement spring water.
Kengkhar site, Bhutan: Monitoring report	MSC approach and log-book tool will be used to monitor the actions in the community.

Cross-sites: 6 short articles submitted to IFWF2 in Addis Ababa revised and published	4 short articles focus on PhD students' research work at as many sites, and the last two ones are related to first joint efforts by the project partners to produce comparative analyses on models and effects of ComMod processes.
Cross-sites: A report based on the framework filled with the analysis of a selection of key case studies on participatory modelling	The focus will be set on case studies dealing with NRM (particularly water & watershed management).
Cross-sites: A report on model synthesis will be prepared and presented at the project meeting in January 2009.	The report will compare the models produced in the various case studies by applying the proposed template for model description.

5. COMMENTS ON PROJECT PROCEDURES

(a) Technical elements	
5.1. Data collected: what is the extent of your data collection to date?	- Data acquisition is now completed at the 5 following sites: Lam Dome Yai, Mae Salaep, Nam Haen, Mae Hae, Lingmuteychu, but is still going on at the 3 remaining ones: Bac Lieu (participatory simulation sessions using the ABM prototypes to be held in the second half of 2008), Doi Tiew/Nan (gaming and simulation workshops to start in September 2008, on-going field survey on vegetation dynamics under different types of land use to be completed, typology of local farmers/herders to be built), and Kengkhar (second gaming and simulation field workshop planned for late 2008, monitoring the use of the water tank network; rainfall data & spring water discharge data to be collected, and socio-economic data, particularly on change process, are also still being collected at this more recently opened site).
5.2. Data analysed: what is the extent of your data analysis to date?	Because the ComMod methodology requires a rapid integration of data and newly acquired knowledge into rapidly evolving models (basically, data analysis and knowledge integration occur after each successive field workshop held at each site), data analysis is completed at the 5 sites where a final ABM is available (Lam Dome Yai, Mae Salaep, Nam Haen, Mae Hae, Lingmuteychu). These models are the synthesis of data and knowledge obtained all along the completed ComMod processes at these sites. The only remaining task is the analysis of the results of simulations run using the validated ABMs developed at these sites. But such models are still at preliminary stages of their implementation (prototypes) at the other 3 sites, where the participatory simulation processes are still going on (Bac Lieu, Doi Tiew/Nan, Kengkhar where rainfall and discharge data are also being analyzed in an attempt to derive any useful relation for the modelling process).
5.3. Information shared: what knowledge or information have you shared to date?	<ul style="list-style-type: none"> - The systematic sharing of information and knowledge among all concerned stakeholders is a key principle of the companion modelling approach, especially during key events such as the successive field workshops held in the villages. - An original knowledge sharing activity during the period was the presentation of the Ban Mak Mai ABM to PN25 visiting scientists by the local farmers as reported above. - In Bhutan, the network of water storage tank built in Kengkhar is the first of this kind in the country and is already attracting interest from elsewhere. Information on possibility to share water considering the spring water discharge and potentials to collect and share through network of tanks is being shared with other organizations and communities. - As for the scientific community, the above-mentioned list of outputs shows that the results of PN25 activities are being shared at conferences, during lectures, and through the preparation and publication of journal articles. The number of journal articles published during each six month period is increasing and we expect to maintain this trend until the end of the project as the number of sites where activities are completed rises. - PN25 is also spending more resources on developing the project website to make more resources available to users (see at www.cpwf25.sc.chula.ac.th).
(b) Project Management element:	
5.4. What would you do differently as a result of lessons learnt?	<ul style="list-style-type: none"> - Be less ambitious in the definition of the research questions of the project PhD students to facilitate their work and avoid delays in completing their research projects. - In ComMod processes for water management, important things occur between key events (such as the classic gaming & simulation field workshops), therefore a close monitoring of what is happening is crucial and is not compatible with the long absence of the key researcher at a given site when he is also a PhD student and needs to travel abroad for several months. - A more compact project, with less sites, and if possible similar time frames at each of them will be easier to manage and more efficient. The variations in the time frames for the implementation of the activities at the different 8 sites of the current project are complicating the project management, and delaying the coordination of across sites comparative analyses.

6. STATUS OF EXPENDITURE AND STAFF INPUTS: WHOLE PROJECT TO DATE

EXPENDITURE		US\$
Total project budget		733 339.00
¹ Funds planned to be received to date		179 907.00
Funds actually received by CIRAD to date		231 168.00
Total expenditure to date		269 581.31
Funds committed		434 000.00
Balance remaining		164 418.69
Matching Funds Cash/in kind	<ul style="list-style-type: none"> - On track for the following partners: Cemagref, Chulalongkorn University, Chiang Mai University, Ubon Ratchathani University. - As of 30 June 2008, CIRAD has already committed 265,000 USD since October 2005. This is more than the total amount planned for the whole duration of the project (260,339 USD). 	
Comment on expenditure compared with project progress - Is it on track?	<ul style="list-style-type: none"> - Mekong Development Institute at Cantho University, Vietnam: the first payments received in 2006 and 2007 were exhausted in late 2007. The work plan was adjusted in the first semester of 2008 (no field activities and focus on in the lab. Modeling activities) to wait for the arrival of the next payment (being transferred in early September 2008 following the arrival of the 5th & 6th payments at Cirad in Montpellier in late August 2008). - Ministry of Agriculture of Bhutan: the part of the funding administered by CIRAD in Montpellier, France (30,000 USD) has been extended to 2010 with agreement from CPWF. The remaining funding administered by MoAB in Thimphu will be exhausted by the end of 2008. - Following the end of the complementary EU-funded Ecole-ComMod project (required to secure the funding from the French donor) in late 2007, all the sites in Thailand and Bhutan have been mainly relying on PN25 funding since 1st January 2008. This is explaining the rapid increase in the project expenditures during the last 6 months reported above. 	
Comment on time spent compared with project progress - is it on track?	<ul style="list-style-type: none"> - It is on track at all the project sites. - The PN25 project leader had to spend more time than planned during the first semester of 2008 to expedite reporting and financial management tasks. This is the main reason behind the current excess of matching funds from CIRAD compared to the initial plan. 	

7. CPWF ASSESSMENTS *

For the information of site coordinators only

Assessment *	Basin Coordinator				Theme Leader				Managing Center Administrator				Consolidated assessment	
	1	2	3	X	1	2	3	X	1	2	3	X		
Is the Project contributing quality outputs towards Basin and Theme priorities?														
Have you verified the progress and dissemination reported?														
Is the Project working according to its plan?														
Is the project sufficiently focused on CPWF objectives?														
Does the project demonstrate a new research approach in the spirit of CPWF?														
Are provisions for stakeholder and end user involvement adequate?														

¹ This is the sum of the scheduled payments up to June 2008 as stated in the project document. Actual funds received are mentioned in the following row.

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Are provisions for addressing gender issues adequate?															
Are provisions for addressing environmental issues adequate?															
Action suggested to resolve any inadequate assessments (to be supplied to Project Leader)															
Other comments (expand below if necessary) (to be supplied to Project Leader)															

* Assessment: (1) Good: a high standard of work; (2) Adequate: an acceptable standard of work, but improvements are possible; (3) Inadequate: this aspect of the project is not up to standard and must be improved; (X) Not known.

RECOMMENDATION TO CPWF SECRETARIAT: SATISFACTORY / UNSATISFACTORY / TERMINATE
SATISFACTORY

Is there a need to change the plan of the project? If so, why and how?

NO

Comments to Secretariat to support this recommendation (optional):