

Strengthening self-determination for social transformation through participatory approaches in pro-poor agri-environmental research and development: Case examples from Thailand

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Introduction

Asian agriculture is undergoing rapid transformation, driven by increased commercialization of food and cash crop production and the globalization of trade (von Braun and Diaz-Bonilla, 2008, 4). At the same time it faces challenges such as increased competition from industry for land and water resources. Environmental degradation and climate change pose additional challenges to the stability and future prospects of agricultural production (Johnston et al., 2010, 4-10), particularly in the production of food to meet the growing demands of increasing populations. In this context, there are increasing calls for sustainable agricultural development.

An imperative for securing economically, environmentally and socially sustainable agriculture is ensuring that the poorer among the agricultural communities are not increasingly disadvantaged and marginalized in the process of agricultural transformation. Chambers (1987, 15-25) argues that sustainability depends upon starting with the poor and putting their priorities first. These priorities include short-term satisfaction of basic needs and long-term livelihood security. This, he argues, calls for research and development (R&D) approaches that shift the focus and initiative to the rural people themselves. The approaches should seek to create and maintain conditions in which poor people attain sustainable livelihood levels and see benefits for themselves in enhancing long-term productivity through having a stake in stabilizing the environment.

Implicit in such approaches is the active engagement of target communities in participatory ways that elicit and use local knowledge to complement scientific or “external” knowledge in specific problem-solving contexts. Participatory approaches to agricultural research and rural development take many different forms and are conducted

for different purposes, ranging from increasing efficiency in technology development to empowerment of communities for self-determination in sustainable agricultural development (Neef, 2005, 8). The effectiveness of participatory approaches is varied. Most experiences with participatory initiatives are still considered mere “islands of success” (El-Swaify et al., 1999, 37). In relatively few cases self-sustaining processes have been fostered for continuity beyond the project duration (Neef, 2005, 10). It is important to derive lessons from and build on such experiences.

Study objective, approach and methodology

In this study, I developed an evaluation framework for participatory approaches with emphasis on assessing how and to what extent such approaches enhance the potential of target communities to make informed choices about their livelihood activities, meet contingencies and adapt to changes.

The analytical framework (Figure 1) uses the Theory of Change (Anderson, 2005, 2-9) to provide the overarching structure for identifying specific program/project goals, pathways of change, desired outcomes, interventions and assessment indicators. Other analytical tools used include the social network mapping tool¹ (Clark, 2006) to conduct analysis of institutional and power relations among key players (Matsaert, 2002, 7), most significant change identification (Davies and Dart, 2005, 8-9) and outcome mapping (Earl, et al., 2001) to evaluate outcomes and measure indicators. The assessment indicators focused on the learning and empowerment of key stakeholders, most importantly the target rural communities.

This evaluation framework was applied to three case studies (Figure 2) that illustrate the use of various participatory methods employed by different research projects to address specific livelihood and natural resources management issues (Table 1).

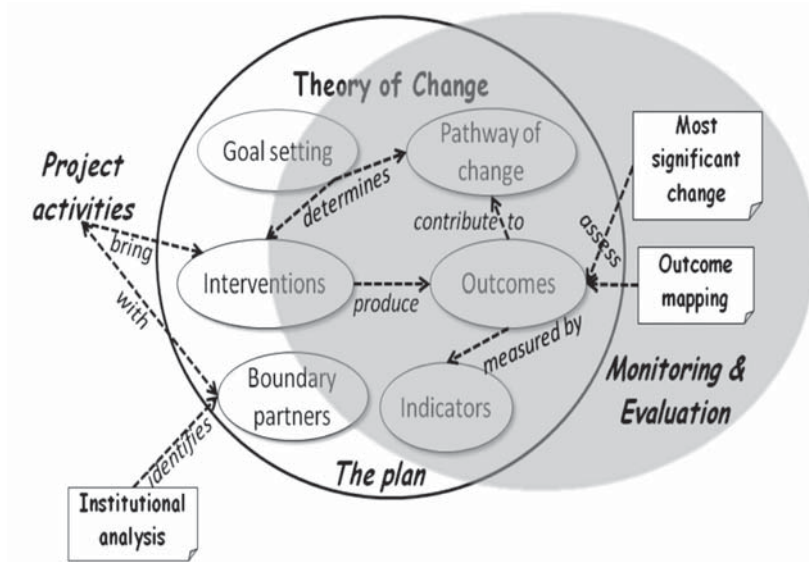


Figure 1. Conceptual framework for analyzing and evaluating project outcomes.

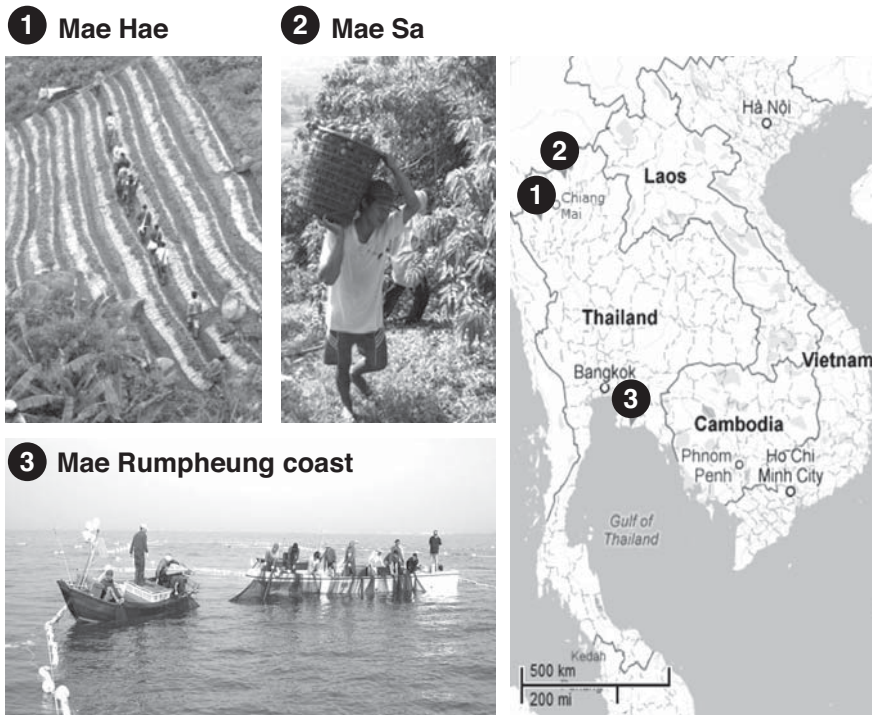


Figure 2. Location of the three case studies in Thailand

Analysis of each case study involved review and distillation of information from project documentation (reports, papers), interviews with

key project implementers, and field observations and interviews with target communities (Table 1).

Case study	CS1: Mae Hae	CS2: Mae Sa	CS3: Mae Rumpheung
Project proponent	PhD researcher	The Uplands Program ²	SEAFDEC/TD
Problem focus	Land and water management within watershed in ecologically-sensitive highlands	Alternative marketing channels for lychee produce to sustain tree crop cultivation on sloping land	Operation and management of set net fishing as an eco-friendly technology for sustainable coastal fisheries
Participatory approaches used	Role-playing games (with individual farmers); Facilitation support to collective problem diagnosis and negotiation (with Village Network)	Participatory action research to: <ul style="list-style-type: none"> - extend technical skills for good agricultural practices to farmers; - inculcate marketeering intelligence and skills to farmers 	Participatory consultation and forging of multi-party alliances; Participatory action research to: <ul style="list-style-type: none"> - install, adapt and operate set net - establish group operational procedures
Assessment interviews conducted with:			
Project implementers & associates	Project leader Former project assistant	Project leader PhD student Market chain advisor	Project leader Japanese technical advisor
Target community	3 Village Network members 7 villagers from 4 villages	3 Hmong group leaders 11 Hmong group members from 4 villages 2 Hmong non-members	5 members of the set net fisher's group Municipality Director

Table 1. The selected case studies and assessment interviews conducted

This paper focuses on the complexities that confront such participatory R&D efforts, particularly the institutional and social processes that impinge upon the ability of marginalized communities to benefit from agricultural innovations. The use of various participatory approaches is appraised in terms of how these approaches might help target communities to better realize these benefits.

Case study 1: Land and water use and management in the Mae Hae watershed of Chiang Mai province.

The context

The mountainous areas of northern Thailand are home to diverse indigenous groups who now mainly cultivate food and cash crops as substitutes for opium, resulting from programs for agricultural

production, processing and marketing established since the early 1980s by the Royal Project Foundation (RPF) (Williamson, 2005,10-11) and several other internationally-funded initiatives (Suraswadi et al., 2005, 374).

In the Mae Hae watershed the hill-slope land traditionally cultivated by the Hmong and Karen communities was placed under legal protection as watershed or forest reserve by the Thai government. However the Royal Forest Department (RFD) tolerates the continued controlled use of these lands by locals on account of their established occupancy pre-dating the legislation.

Population pressure and the quest for more land for cultivation result in encroachment by locals as well as outsiders, giving rise to tensions among villagers along ethnic lines as well as with the

RFD. A Village Network (VN), set up since the mid-1990s as a coalition of village heads (VH) and other representatives, acts as an intermediary between the Mae Hae villagers and the state on land management issues. The VN crafts local management rules for handling “offenders” to avoid official sanctions and earn the tolerance of RFD officers. Tensions mounted in 2007 when Hmong farmers from outside the watershed opened new plots in the upper forest and diverted water to irrigate their crops, at the expense of downstream farmers who depended on the same water sources.

The intervention

A Ph.D. researcher from Chiang Mai University happened to be on the scene since late 2003 conducting his thesis research on land and water resources management issues in the watershed (Promburom and Bousquet, 2008, 1). He had been using role-playing games with groups of farmers to create awareness and stimulate collective thinking and action towards improved land use and water management, to minimize environmental degradation and to cope with drought-induced water shortages.

His constant presence in the area earned him acceptance among the VN members as a neutral academic who could potentially help them resolve the issue of water use conflict. He applied participatory techniques to help the VN seek a workable solution. Using photographs taken during collective field investigations and computerized map overlays as objective evidence, and employing facilitation techniques, he helped the VN mediate a series of complex negotiations. From a “free-for-all” and “first-come-first-served” situation of water withdrawal, the VN negotiations arrived at a collective agreement that upstream farmers would limit the pipe size used for water diversion in order to allow sufficient water flow to supply downstream farmers (Promburom, 2010, 98).

Outcomes

A year passed before the collectively-agreed rule was implemented by the concerned communities. The delay was largely due to the unclear structure of

authority within the VN with regard to implementing the pipe size rule. The researcher’s former project assistant was subsequently employed at the local RPF office and was entrusted by the VN to coordinate the implementation of the pipe project. She helped the villagers to secure resources for installing the pipes. She also continued engaging with the VN over the subsequent four years (2007-2011) and put into good use the facilitation and participatory methods she had learned to help the VN resolve various other issues. Her elevation to a supervisory position in 2011 to oversee village social strengthening projects in 38 areas within Chiang Mai province provided the opportunity for her to train and encourage junior field staff to use participatory and group-dynamics approaches in carrying out their work.

In 2012, the VN continued to grapple with existing and emerging issues as demands on water and land resources persisted and changed. VN members interviewed acknowledged having learnt facilitation and mediation techniques from the researcher. Yet they expressed ambiguity about resolving issues on their own. They raised the need for mediation intervention by neutral outsiders and for the support of authoritative government personnel. This was because, they said, the VN did not have legal authority to enforce rules. The VN can only exercise moral authority. This breaks down when village heads are expected, but reluctant, to act on collective decisions that are construed by village constituents as betraying ethnic and kinship loyalties.

Individual farmers interviewed expressed general awareness of the natural resource management issues within their local context. They reported having used environmentally-friendly practices on an individual basis, including planting trees rather than annual crops on slopes to minimize soil erosion, and reducing pesticide use. At the collective level some farmers reportedly implemented localized water-sharing scheduling among neighbors. There were cooperative efforts in constructing fire breaks for fields and property. They attributed their learning to the role-playing games conducted by the researcher and to their exposure to many other R&D interventions the area has attracted over the years.

Such small “successes” are still fragmented and their sustainability is uncertain. Farmer’s decisions on what to plant are largely driven by commodity prices. The recent introduction of strawberries as a lucrative crop is worsening problems for water management, soil conservation and contamination with agro-chemicals. Solutions aimed at reducing the environmental impact of farming on hill slopes must also address challenges that continually confront upland farmers as livelihood opportunities change, as exemplified by the next case study.

Case study 2: Lychee Marketing in the Mae Sa watershed of Chiang Mai province.

The context

Growing tree crops on steep slopes is environmentally more sustainable than growing short-term annual crops, as trees are more effective at intercepting and regulating the flow of rainwater and preventing soil erosion (Thomas et al., 2004, 72-75). The cultivation of various temperate-zone fruit trees is economically important in northern Thailand (Williamson, 2005, 10). Yet small-scale growers have neither had influence in determining the selling price for their crops nor the capacity for adding value to the products. For example, the lychee growers of the Hmong ethnic minority

had been selling their fresh produce to middlemen who dictated the farm-gate price. They also entered into contract farming arrangements with large agro-processing companies as assured buyers, but at depressed prices. The declining price of lychee since the late 1990s due to the expansion of orchards had reduced profitability for small-scale growers (Schreinemachers, et al., 2009, 3). Consequently lychee orchards were being abandoned or replaced with more profitable vegetable and strawberry cultivation, which entailed frequent land clearing and soil disturbance.

The intervention

Concerns over sustainable livelihoods and land use prompted a team of German and Thai researchers from the German-funded Uplands Program to conduct action research with Hmong lychee growers in the Mae Sa watershed (Figure 1) to help them engage in post-harvest processing of lychee and to seek alternative marketing channels for both their fresh and processed produce that would by-pass the middlemen.³ Figure 3 illustrates use of the Theory of Change (ToC) framework to capture the intervention pathways described by Tremblay and Neef (2009, 225-230) that produced the series of outcomes to achieve the goal or overall objective of this particular project.

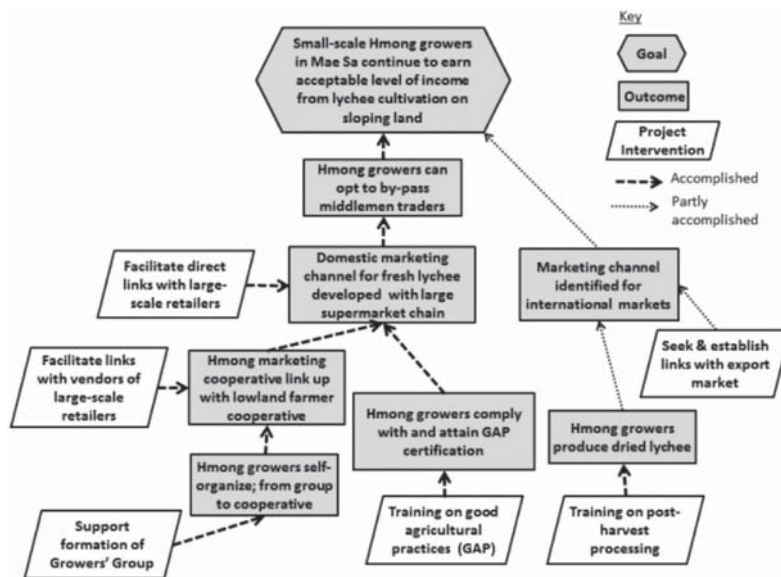


Figure 3. Participatory action research interventions in lychee marketing in the Mae Sa watershed

Outcomes

Within the duration of the project, which ended in June 2012, the researchers succeeded in getting the Hmong growers organized as a group and establishing a domestic marketing chain to supply fresh lychee to a large supermarket chain (LSC), thus bypassing the middlemen. The marketing was carried out through a lowland farmer's cooperative (LFC) as an intermediary that undertook to collect and pack the produce of the Hmong grower's group (HGG) and deliver sufficient volumes of fresh fruit to the LSC. HGG leaders and members interviewed expressed satisfaction with this arrangement. Their confidence had increased as their continued engagement and negotiation with the LFC had resulted in prices that were on average 20 percent higher than the middlemen's offered prices, over a period of at least four seasons. The project also provided training to HGG members to adopt crop management techniques that complied with and qualified for the Good Agricultural Practices (GAP) certification of the Thai government (Neef et al., 2012, 6). While most HGG members did get GAP certification, those interviewed stated that it was not among the main criteria for acceptance of their produce by the LSC, which included fruit size and color.

Of the various post-harvest processing experiments with the Hmong villagers, dried lychee proved the most promising product. However its domestic marketing is hampered by a government requirement that to get the mandatory Good Manufacturing Practice (GMP) certification the processing facility must be located in legally-titled premises, which the Hmong communities in the highlands do not possess. That the Hmong have traditional right of occupation on state land was not accepted as an exemption to this rule (Neef et al., 2012, 9-10). The research team helped the Hmong growers seek export channels for the dried lychee to European markets—natural food retailers and fair trade organizations—that do not require Thai GMP certification. However issues of strict compliance with international food safety standards and associated costs, and the capacity of the Hmong growers to produce the required volumes,

still need to be addressed, as expressed by the group leaders interviewed.

This case study illustrates how, through participatory action research approaches, a multi-institutional and multi-disciplinary team of researchers fostered collaboration among small-scale producers and large trading entities in developing marketing strategies that are economically, socially and environmentally more sustainable. The researchers brought knowledge about market networks, quality standards and associated farming practices. Through participatory interactions, they gained insight into local power relations, earned the trust of the Hmong growers and moderated their expectations while encouraging them to take the major role and initiative in the negotiation and marketing processes. This local capacity-building is imperative for the Hmong to continue pursuing marketing strategies that are advantageous to them so that they can maintain their lychee orchards on sloping land, thereby contributing to environmental protection of the fragile highland ecosystem.

Case study 3: Piloting set net technology transfer for sustainable coastal fisheries in Rayong province of Thailand

The context

Tropical fisheries, characterized by highly diverse species caught using a variety of fishing equipment ranging from artisanal to commercial fishing, poses difficult challenges for sustainable fisheries management (Beddington et al., 2000, 13). Improved coastal fisheries management is urgently needed to sustain if not rehabilitate the declining coastal fish stocks in Southeast Asian waters (Silvestre et al., 2003,1), the livelihood impacts of which are most severe on the high numbers of small-scale fishers (SSF). The SSF face competition in congested coastal fishing grounds and conflict with commercial fishing fleets, despite the delineation of fishing zones for fishing vessels of different capacities and using different equipment. This case study focuses on a pilot project to introduce set net fishing technology to Thai SSF as a technological intervention aimed at promoting the sustainability of coastal fisheries. The pilot site is

located at the eastern seaboard of the Gulf of Thailand in Rayong province (Figure 1).

The intervention

The set net, introduced from Japan, is a stationary fishing apparatus that operates in a similar way to the Thai traditional fish stake, *pob* (Indrambarya and Thiemmedh, 1963, 32-34), whereby nets are installed instead of wooden stakes to guide fish into inner compartments where they are trapped and selectively harvested, alive and fresh. The set net project initiated in 2003 by the Southeast Asia Fisheries Development Center Training Department (SEAFDEC/TD) attempted to demonstrate multiple benefits of the technology and its potential contribution to sustainable coastal fisheries management (Munprasit et al., 2005, 254-267) (Figure 4).

The main proponent from SEAFDEC/TD started with consultations involving target fisher communities along Mae Rumpheung beach and the Department of Fisheries (DoF) and its

Rayong-based Eastern Marine Fisheries Research and Development Center (EMDEC). The parties were brought together to collaborate in the pilot venture. Supported by technical and in-kind assistance from Japanese scientists and experienced set net fishers from Himi City⁴ in Japan (Anonymous, 2008), the pilot project engaged with SSF from seven villages in a collective effort to install, adapt and operate the Otoshi-ami set net off the Rayong coast (Figure 5).

Challenges in technical and social engineering to attain an optimal harvest demanded close collaboration among the researchers (international, regional and local) and the fishers. Relationships of trust needed to be fostered. The researchers facilitated the formation of a set net fisher's group (SNFG) to handle all aspects of operating the set net. To the Thai fishers accustomed to individual operation of their traditional fishing operations, the set net was an alien item that required the learning of new technical skills and also learning how to function as a team to operate it.

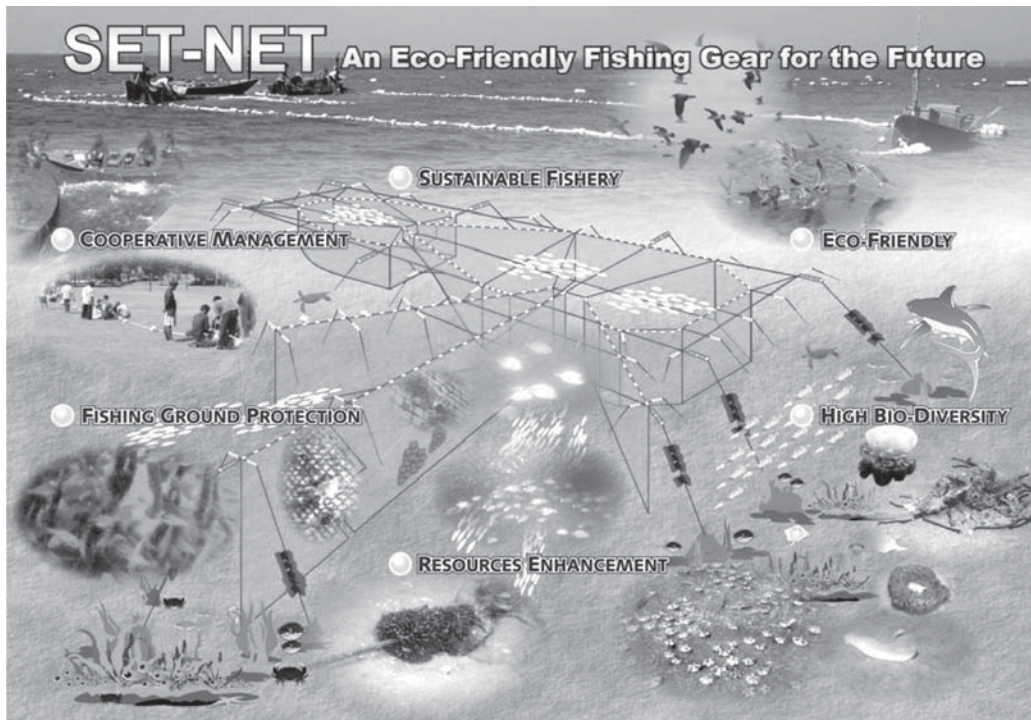


Figure 4. Set net: an eco-friendly fishing gear for the future
Source: Munprasit, Aussanee (personal communication, 2012)

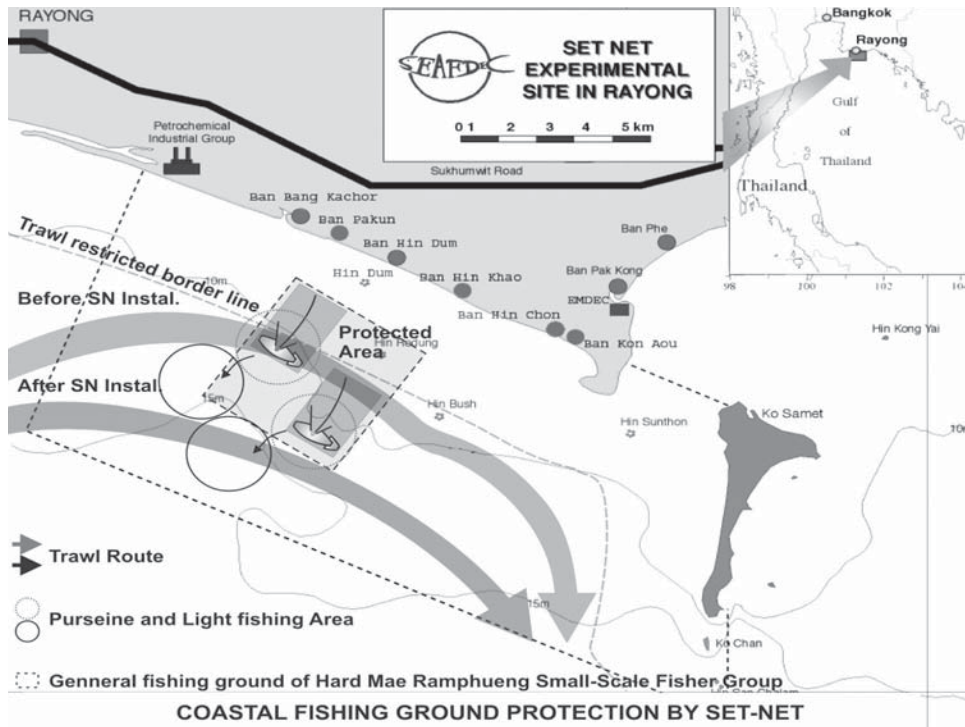


Figure 5. Effect of set net installation in Rayong, Thailand, on protecting coastal fishing ground
 Source: Munprasit, Aussanee (personal communication, 2012).

Outcomes

Nine years later, 15 SNFG members who benefited from the training and mutual learning-by-doing experiences with local and international experts are profitably operating two set nets installed 4.8 km from the shore. The operations are limited to the off-monsoon season (October to April), and the members supplement their income by operating other fishing equipment and targeting different species (such as crab and squid). Despite this, the group members interviewed expressed appreciation of the various benefits of their set net installation. These included deterring commercial fishing fleets from approaching close to shore (Figure 5), thereby protecting the fishing grounds of the SSF.

The group members also showed a genuine camaraderie that has developed through working together. There were early misgivings among members about non-transparency in financial accounting (Suanrattanachai et al., 2008, 21).

However since its official registration with the Ta Phong sub-district administration as a micro-enterprise, the SNFG is now obligated to keep and submit proper annual financial accounts. Its most recent financial records (2010-11) show that from the annual net profits, 38 percent was distributed as dividends to members and 2 percent set aside as public fund to support village schoolchildren (Munprasit, personal communication, 2012). This gesture reflects the group's collective desire to contribute to their community.

Despite its nine-year presence, the set net technology has yet to make an impression on the fishing community at large. A program with seed funding to launch a similar venture in nearby Ban Phe by the municipality's enthusiastic director was not well-received by the local SSF, on account of perceived low profit per capita and restricted operation of the gear to the off-monsoon period. The greatest obstacle thus far has been reluctance at official levels towards acceptance of set net technology.

Under the Thai National Fisheries Management Policy, deployment of passive fishing gear is allowed only in officially-approved areas. High-ranking fisheries officials, unconvinced of its benefits, refrain from endorsing the set net as a legal fishing method. Its proponents need to furnish solid scientific evidence of the ecological benefits to augment the empirical evidence from visual observations and from before-and-after photographs showing increased aquatic life in the vicinity waters and seabed, which attracts sea birds and fishers alike (SEAFDEC/TD, 2005, 29). Continuing scientific collaboration between Thai and Japanese researchers⁵ could provide such evidence in due course. There is also a need to formulate clear guidelines, such as the Set Net Code of Practice of New Zealand,⁶ to avoid malpractices that prompted the restrictions on passive fishing gear in the first place.

Through participatory action research this set net pilot project saw the transformation of some individual SSF operators to practitioners of collective action. The transfer of ownership of the project from SEAFDEC/TD to the EMDEC in 2005 strategically brought the Rayong-based researchers closer to the fisher communities and acquainted them with participatory approaches in problem solving. Fostering such transformations to reach a critical mass that would make a positive impact towards sustainable fisheries management, be it through set net or some other eco-friendly technology, requires not only concerted efforts of enlightened R&D personnel but also enabling policies and clear guidelines.

Conclusion

These three case studies represent a diverse set of challenges faced in implementing pro-poor and pro-environment strategies for agricultural development. Yet the cases share some common characteristics that provide a basis for comparison. All three are R&D projects to introduce agricultural technology, environmental knowledge and marketing avenues to target groups, in ways that foster experiential learning through collaborative efforts to make informed choices and seek workable solutions.

The studies demonstrate that collaboration among participating parties as disparate as professionals (academics, government and non-government), business enterprises and rural folk needs building relationships in which different contributions of knowledge, experience and skills are recognized and valued. Fostering such relationships is not easy. Skills in participatory, facilitation and negotiation techniques are not the forte of agricultural researchers, largely because of their technical training. Acquiring such skills requires commitment and belief in mutual learning. An entrenched top-down mindset that manifests in unequally-skewed interactions between researchers and extensionists, and between extensionists and farmers, is particularly strong in sectorally-defined government agencies. Policies and highly-institutionalized agricultural and related support services meant to help rural communities also sometimes work at cross-purposes and hamper innovative strategies to help the poor, as illustrated by the lychee marketing and set net fishing cases.

The case studies illustrate that technological interventions aimed at enhancing agricultural sustainability must be accompanied with improvements in capacity for self-determination among poor and marginalized farmers and fishers, not only to embrace innovative and environmentally-friendly technology but also to work around institutional and policy obstacles. The comparison in Table 2 focuses on key aspects of this capacity improvement and evaluates, in a qualitative manner, the extent to which each project has been able to influence these aspects (itemized 1 to 10) through the use of participatory approaches. Item 3 reflects individual capacity (*power within*, in the parlance of empowerment (Charlier et al., 2007, 10) while items 4, 5, and 6 reflect collective capacity (*power with*) to bring about change (*power to*), at the personal (item 2) and social (item 7) levels. Change at the social level desirably shifts power relations away from domination (*power over*) to more equitable terms, as demonstrated by the lychee marketing case of the Hmong growers.

Case study	CS1: Mae Hae	CS2: Mae Sa	CS3: Mae Rumphheung
<p>Contribution of the project in:</p> <ol style="list-style-type: none"> 1. Fostering inter-agency collaboration 2. Developing technical skills for innovative technology 3. Developing/enhancing facilitation and mediation skills for conflict resolution 4. Fostering collective agreement and action 5. Group formation and self-organization 	<p>■ No direct partnership; project proponent operated as an individual</p> <p>■ Not a priority intervention of the project</p> <p>■ Through use of facilitating techniques and proper documentation</p> <p>■ Collective agreement reached and action taken, albeit delayed, on managing water diversion across the landscape</p> <p>— Extant Village Network (VN) predates the project</p>	<p>■ German and Thai university research partners from multiple disciplines</p> <p>■ Hmong growers learnt GAP and post-harvest processing techniques</p> <p>■ Not a priority intervention</p> <p>■ Collective agreement and action of Hmong grower's group (HGG) members in supplying fresh lychee to supermarket chain annually at negotiated prices</p> <p>■ Hmong lychee growers formed groups for marketing fresh and processed lychee</p>	<p>■ Regional fisheries training and national fisheries research partners</p> <p>■ Fisher group members learnt set net operation, maintenance and harvesting techniques</p> <p>■ Not a priority intervention</p> <p>■ Collective agreement on scheduling of duties for set net operation; Collective action in teams to carry out operational activities</p> <p>■ Formation of operational group among set net fishers</p>

Case study	CS1: Mae Hae	CS2: Mae Sa	CS3: Mae Rumpheung
Contribution of the project in:			
6. Building capacity for cooperative administration and management	<p>Functioning of VN already in place, no clear evidence of enhancement through project intervention</p> <p>No clear evidence that VN members feel more empowered in negotiation with government authorities</p> <p>Through role-playing games (with selected individual farmers); field visits and observations (with VN)</p> <p>Limited dissemination among individual farmers; departure of project proponent and leadership changes within VN may dilute acquired skills</p>	<p>The marketing group upgraded to being a cooperative to deal with financial management</p> <p>Hmong grower's group are better able to negotiate their own terms with procurer agencies and also better terms with middlemen</p> <p>Not intended as a direct project intervention</p> <p>Membership in the marketing group expanded within a year from 26 to 119 members from five Hmong villages</p> <p>Hmong grower's group likely to be able to continue seeking alternative marketing channels, if not strengthen or sustain the established channels</p>	<p>Improvement evident in organizational and reporting accountability among the set net fisher's group</p> <p>Not a priority intervention</p> <p>Through direct observation of ecological changes in vicinity of set nets</p> <p>Initial involvement of the broader fisher's community provided exposure of other fishers; no clear evidence that subsequent learning of the fisher's group has been effectively transmitted to others</p> <p>Restricted membership of present set net group is a limitation; continued presence of researchers through a follow-up project may strengthen the set net case</p>
7. Enhancing collective bargaining power	<p>No clear evidence that VN members feel more empowered in negotiation with government authorities</p>	<p>Hmong grower's group are better able to negotiate their own terms with procurer agencies and also better terms with middlemen</p>	<p>Not a priority intervention</p>
8. Raising environmental awareness	<p>Through role-playing games (with selected individual farmers); field visits and observations (with VN)</p>	<p>Not intended as a direct project intervention</p>	<p>Through direct observation of ecological changes in vicinity of set nets</p>
9. Dissemination to wider target community	<p>Limited dissemination among individual farmers; departure of project proponent and leadership changes within VN may dilute acquired skills</p>	<p>Membership in the marketing group expanded within a year from 26 to 119 members from five Hmong villages</p>	<p>Initial involvement of the broader fisher's community provided exposure of other fishers; no clear evidence that subsequent learning of the fisher's group has been effectively transmitted to others</p>
10. Engendering sustained impact on social transformation	<p>VN presence continues but further strengthening of power relations to its advantage is uncertain</p>	<p>Hmong grower's group likely to be able to continue seeking alternative marketing channels, if not strengthen or sustain the established channels</p>	<p>Restricted membership of present set net group is a limitation; continued presence of researchers through a follow-up project may strengthen the set net case</p>

Table 2. Case study comparison of learning and capacity enhancement outcomes resulting from project interventions

The Mae Hae project had a more abstract objective of inculcating environmental awareness to spur collective decisions and action at the VN level on managing land and water resources. The other two projects had more definite objectives of introducing specific livelihood-related innovations, drawing upon collaborative partnerships to tackle multiple issues that necessitated collective action by target farmers and fishers. For the Hmong lychee growers in Mae Sa, collective action was motivated by prospects of better financial benefits; less so in the case of the fishers of Mae Rumpheung. There was more “learning-by-doing” at the grass-roots level for these two cases.

Raising environmental/ecological awareness was most explicitly manifested in the Mae Hae case, circumstantially for Mae Rumpheung, and only as an indirect motive in Mae Sa. Instilling conviction for pro-environmental actions linked with livelihood activities remains a challenge. Environmental changes are incipient and are generally perceived as less pressing than the exigencies of daily living struggles, except when major environmental disasters occur that impinge directly on lives and livelihoods.

Researchers have multiple roles to play. Their targets are not only the farmers and fishers but also personnel from organizations responsible for promoting rural development – government, non-government and the private sector. Increasingly decentralized governance in many Asian countries provides opportunities for engaging local government bodies in solving problems with affected communities and, in the process, ideally, enhancing sensitization towards more people-oriented approaches. Training the next echelons of R&D workers in pro-people approaches constitutes investment in human resources as catalysts of change to help the ultimate targets—the farmers and fishers. Their increasing numbers and insertion into government and non-government institutions and programs will provide the opportunity and space for sustained engagement with communities and/or influence policy and decision-making. A multi-pronged strategy of strengthening capacities at both fronts—the service providers and target groups—would

hopefully, with persistence of time, bring about the eventual structural and social transformations that time-bound R&D projects are generally constrained to achieve.

NOTES

¹ <http://weadapt.org/knowledge-base/adaptation-training/module-social-network-mapping>

² Abbreviation for the “Sustainable Land Use and Rural Development in Mountainous Regions of Southeast Asia” research program led by the University of Hohenheim of Germany; <https://sfb564.uni-hohenheim.de/83666>

³ From litchi growers to litchi entrepreneurs <https://sfb564.uni-hohenheim.de/83719>

⁴ <http://www.city.himi.toyama.jp/hp/page000002800/hpg000002781.htm>

⁵ The “Coastal Area Capability Enhancement in Southeast Asia” project led by the Research Institute for Humanity and Nature, Kyoto, Japan. http://www.chikyu.ac.jp/rihn_e/project/D-05.html

⁶ Set Net Code of Practice of the Ministry of Fisheries New Zealand. <http://www.fish.govt.nz/NR/rdonlyres/A55201EE-5CEC-454E-95FE-5BAB5D68B9B2/0/guidesetnet.pdf>

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