Understanding the Impacts of Extension Methods
on the Livelihoods of Small-Scale Fishers

Savitree Rangsipaht and *Supaporn Thaipakdee*

Information related to the impacts of extension methods on the livelihoods of small-scale fishers were collected from ten participants from seven countries who attended the International Training Course on Coastal Fisheries Management and Extension Methodology organized by the Training Department of the Southeast Asian Fisheries Development Center (SEAFDEC/TD) in Samut Prakan, Thailand on 2-26 November 2010. A questionnaire was designed to collect the data while focus group discussions and in-depth interview were also carried out to gather the relevant qualitative data.

A case study which aimed to recognize the clear evidence of the impact of extension methods on the livelihoods of small-scale fishers was conducted involving 10 fisheries officers from seven countries who attended the SEAFDEC/TD International Training Course on Coastal Fisheries Management and Extension Methodology in November 2010. Specifically, the case study was aimed at elucidating the basic demographic information of the participants and the factors influencing the adoption of extension programs and extension methods, identifying the extension methods chosen by the participants to be fostered to small-scale fishers, and understanding the impacts of extension methods on the livelihoods of small-scale fishers. Out of the ten participants, five had been directly involved with extension programs where they served either as supervisor, coordinator or evaluator of extension programs or member of working committee or Head of Extension Unit. In working with small-scale fishers, the participants chose demonstration and training methods, where they also indicated that cost reduction, less maintenance, expansion of fishing activities, improved fish catch and income were among the major impacts of the extension methods being fostered to the small-scale fishers. Moreover, the participants also recommended that in order to ascertain the impacts of extension methods, investigation of the improvement in infrastructures and environmental changes, should be carried out.

Questionnaires were used to gather the necessary information from the ten participants specifically pertaining to their basic demographic information, and the factors relating to the adoption of particular extension programs and methods. Focus group discussions and in-depth interviews were also conducted to exchange ideas and information between the researchers and the ten target participant-respondents.

Fisheries Extension Methods

The International Training Course on Coastal Fisheries Management and Extension Methodology was organized by SEAFDEC/TD in Samut Prakan, Thailand from 2 to 26 November 2010 in order to assist the fisheries extension officers from the Southeast Asian countries in building up and developing their capacity for integrated coastal management approaches. The training course was also designed to enable the fisheries extension participants to expand their skills beyond the traditional fisheries management concepts. At the course of the training, the participants were also provided with skills in mediation, facilitation, conflict resolution, and appropriate extension methods to mould them into champions and agents of responsible coastal change.

During the said Training Course and specifically on the lecture on “Fisheries Extension: Extension Concept and Method”, ideas were exchanged between the researchers conducting the case study who also served as lecturers of the Training Course, with the ten participants on the impacts of extension methods on the livelihoods of small-scale fishers. The ten participants from seven countries, namely: Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, and Thailand, were considered as the respondents of the case study. Two out of the ten participants were females.

Although little evidence was gathered on the effectiveness of particular extension methods but by focusing on demonstration and training, the research-based information gathered through this case study had a clear evidence to

Group of participants during the International Training Course on Coastal Fisheries Management and Extension Methodology

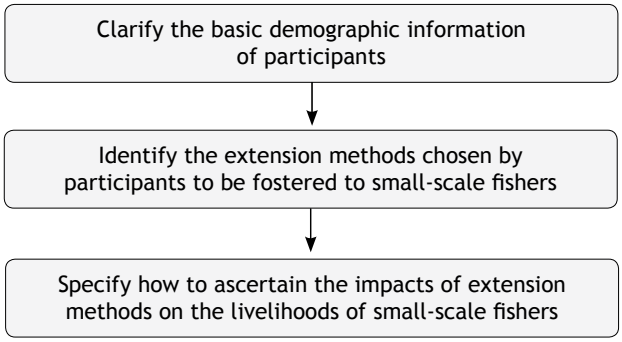

Fig. 1. Steps undertaken during the case study

show the significance of the extension methods. The steps carried out during the case study are shown in **Fig. 1**. It should be understood that in the case study, **extension methods** refer to individual, group and mass methods of extension, while **impact of extension methods** is concerned with the results of the activities or products generated by the extension methods. **Livelihoods of small-scale fishers** convey the way of living of small-scale fishers, while **extension programs** are the activities organized by extension agents to be introduced to the target audiences.

There are three types of extension methods, namely: individual, group and mass methods of extension. **Individual method** includes home visits, office calls, casual contacts, and personal letters. Home visits could be beneficial since opportunities for discussion on private problems of fishers would be facilitated which otherwise may not occur in other circumstances. Home visits could also give extension agents the opportunity to meet with family members of fishers and learn about family problems. Meanwhile, particular care is necessary in writing letters especially in giving certain advice. In any case, detailed records of all individual contacts should be properly kept including their problems and needs. As an extension agent, it is important that any promises made during the individual acquaintances should be kept and appropriately attended to. Thus, every extension worker should keep a detailed daily diary in which all contacts and promises made are recorded in addition to other relevant activities.

Group method requires more careful planning than the individual method, as this could include meetings, demonstration of methods or results, visit to other villages or fish landings. Group meetings are useful in the developing countries because opportunities for discussion among extension agents, fishers and resource persons in a given locality could be promoted.

Fishers are accustomed to learning by demonstration since this is a way in which fathers teach their sons to fish (TDRI, 2009). Subject matters to be taught could include net making and hanging, net repair, new methods or variations from old methods of handling, processing and preservation such as salting, smoking, drying and icing fish, and other practical fishing skills. Field visits should be arranged in areas where advanced techniques had been carried out and which have not been used in other areas. Visits are useful since the visitors could have the chance to see the advantages of making certain possible changes.

Mass method of extension would be suitable especially if the objective is to reach out to as many members of the fishing communities as possible. In this regard, such media as radio, television, internet and social network, printed materials such as newspapers, magazines, posters, handouts, should be utilized for the extension services. Nevertheless, since extension work is a form of an out-of-school educational process, it is essential to monitor the changes derived from any extension program in order to assess whether an extension service is proceeding along line with its objectives or not. Therefore, in any extension program, monitoring and evaluation should be included in the planning in order to have a check-and-balance of the progress against the desired objectives of extension programs.

Impact Study

Impact study is referred to as the study of results of any activity or product. In the context of an extension project, impact study focuses on what the project had ultimately achieved and on the wider, positive or negative effects that the project could have on the target audience. **Fig. 2** shows the make-up of any project. An impact, which may be intended or unintended, is also referred to as an outcome of any project or activity.

In **Fig. 2**, **project** refers to a set of tasks or activities being carried out by a target group to address a particular problem. **Vision** is a very general statement of the future status that needs to be improved that the project is envisaged to contribute to. Thus, it can embody the basic motives or reasons for undertaking a project. On the other hand, **goals** are general descriptions of what a project is expected to achieve, while **objectives** are the specific statements about what the project would achieve. **Inputs** are resources used to achieve the objectives, *e.g.* time, effort, budget, skills, equipments, materials. **Actions** are activities that must be carried out or the strategies that need to be followed for the objectives to be met.

Outputs are activities completed or products made after the implementation of a project while **outcomes** are the results of the activities or products of a project where outcomes are also referred to as **impacts**. **Indicators** are

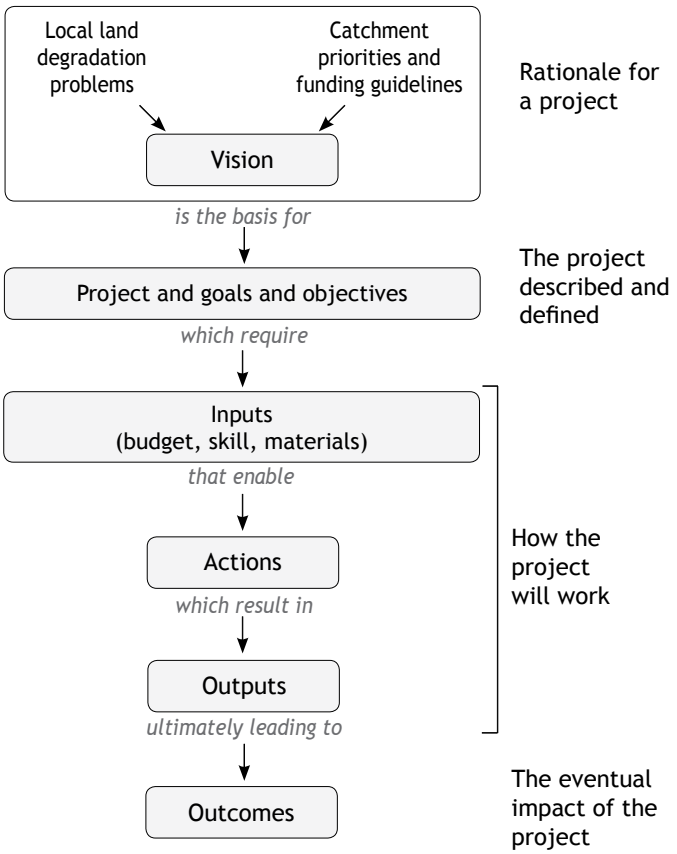

Fig. 2. The make-up of a project
Source: *Woodhill, J and L. Robins (1998: 6)*

specific characteristics or phenomena that tell about the progress of a project and what impacts have been made on the problem that was set up to be addressed. **Performance indicators** are specific types of indicators that relate to the outcomes to determine whether the project's objectives are met. Therefore, it would require a clear evidence and specific type of indicators to determine the impacts of a project or program.

Related Studies

Rangsipaht, Thaipakdee and Weerawat (2010) studied the impacts of the Regional Fisheries Training Center (RFTC) of the Philippine Bureau of Fisheries and Aquatic Resources (BFAR) on the RFTC Quality Training Service Framework which focused on skills, livelihoods, employment, and food security for fishers. The Framework included hands-on training with practicum on livelihood projects which generated some outputs such as skilled manpower and practicum-livelihood projects. It also generated outcomes or impacts to increase more skilled manpower, food security, job and employment, and reduce poverty. The key implementing strategies of the Framework are summarized in **Box 1**.

Brown (2004) studied the impacts of fisheries extension and training on the livelihoods of the poor in Bangladesh

Box 1. Implementing strategies for the RFTC Quality Training Service Framework of BFAR

- Program cooperation, collaboration, partnership, and resource complementation or counter-parting scheme with BFAR, Regional Fisheries Offices (RFOs), Local Government Units (LGUs), and other concerned agencies including Non-Governmental Organization (NGOs) and People's Organizations (POs).
- Areas of complementation included: (1) LGUs in the areas of food/subsistence, extension services, administration support and livelihood projects; (2) BFAR and RFOs in the areas of livelihood projects and technical support; (3) RFTC in the areas of training management, supplies, handouts, monitoring of hands-on training, practicum-livelihood project, and technical support; (4) Other agencies in the areas of livelihood projects and technical support.

through the Fisheries Training and Extension Project Phase II (FTEP-II) which was funded by the Department of International Development (DFID) and the Department of Fisheries (DoF) of the Government of Bangladesh and was implemented from 1998 to 2003. The goal of the project was to improve fish production of poor fishers/fish farmers in a sustainable way by strengthening the training and extension capacity of the DoF. The extension staff also received training in participatory monitoring and evaluation techniques such as Participatory Rapid Appraisal (PRA), baseline survey and setting of goals. The implementation of the FTEP-II also involved the extension agents, small local NGO extension staff, rural secondary school science teachers, female NGO staff, school training assistants, and teacher training institute staff.

The project used the Sustainable Livelihoods Approach (SLA) Model to study the complexity of poverty and the potentials for poverty alleviation. The results showed that the SLA model was useful to review the impact of the project on the poor and for promoting more holistic collaboration between extension offices at local level and helped ensure that extension programs/projects had better targets, and were demand driven and facilitated the development of pro-poor policies or strategies within the DoF of Bangladesh. The impacts of the FTEP-II on the poor livelihoods are shown in **Box 2**.

Results of the Case Study

Basic demographic information of participants

The average age of the ten participants in the International Training Course on Coastal Fisheries Management and Extension Methodology conducted by SEAFDEC/TD in November 2010 was 36.3 years old. The maximum and minimum ages of the participants were 48 and 29 years, respectively. Six of the participants completed Bachelor's degrees while three obtained vocational certificates and only one received a Master's degree. The participants held different working positions either as lecturer in aquaculture,

Box 2. Impacts of the FTEP-II on the livelihoods of the poor in Bangladesh

1. Increased choice of strategy
2. Fish culture was considered a new strategy for many households
3. Training allowed better decision making on the part of fishers/fish farmers, and integration of aquaculture with other farm resources was a strategy for poverty alleviation
4. Increased income could be attained as well as increased food security and reduced vulnerability of the poor

deputy chief of fisheries administration division, policy and plan officer, fisheries officer, fisheries biologist or fisheries licensing officer, and had been holding such positions for 6.5 years on the average, where the maximum length of experience was 15 years while the minimum was 1 year (**Table 1**).

Factors relating to the adoption of particular extension programs

From the results of the survey, five participants indicated that they had been directly involved in their respective countries' extension programs. Four participants cited that they had been responsible for the implementation of 1-5 extension programs. However, one respondent has been responsible for 28 programs. Their assignment was diverse which included either as supervisor, coordinator, facilitator or evaluator of the programs or member of working committee or Head of Extension Unit (**Table 2**).

Table 1. Basic demographic information of participants (N=10)

Basic demographic information of participants	Number	Percent
Age (year)		
≤ 30	3	30.0
31-40	4	40.0
41-50	3	30.0
Ave = 36.3, Min = 29, Max = 48		
Educational attainment		
Vocational certificate	3	30.0
Bachelor's degree	6	60.0
Master's degree	1	10.0
Working position		
Assistant fisheries officer	1	10.0
Deputy Chief of Fisheries Administration Division	1	10.0
Fisheries biologist	1	10.0
Fisheries officer	2	20.0
Fisheries licensing officer	2	20.0
Lecturer in aquaculture	1	10.0
Policy and plan officer	1	10.0
Seed production and data management officer	1	10.0
Working experience (years)		
≤ 5	5	50.0
6-10	3	30.0
11-15	2	20.0
Ave = 6.5, Min = 1, Max = 15		

Factors relating to implementation of extension methods

Seven participants expressed the need to have experience in the adoption and practice of each method prior to selecting which method to adopt. Six participants, on the other hand, emphasized the need to have knowledge and good understanding of the application of each method. Four respondents, however, stressed on the need to conduct an evaluation of the pros and cons of each method, and having adequate budget to conduct each extension method.

Problems encountered in adopting the extension methods

Taking into consideration the respondents' experience, six indicated that the main problems they often encountered were inadequate budget to implement a particular extension method. Five respondents emphasized the lack of appropriate knowledge to adopt a particular extension method had been their problem. For example in the case of inboard and outboard boat engine repair, and fiberglass boat construction. Three participants expressed that their problems had emanated from inadequate skills in each of the extension method.

Table 2. Factors relating to responsibility in extension programs (N=10)

Factors relating to responsibility in extension programs	Number	Percent
Direct involvement with extension programs		
Yes	5	50.0
No	5	50.0
Number of extension program under responsibility		
None	5	50.0
1-5	4	40.0
6-10	-	-
>10	1	10.0
Ave = 3.9, Min = 0, Max = 28		
Position in relation to extension programs*		
Supervisor	2	20.0
Coordinator	2	20.0
Program's main responsible person	1	10.0
Evaluator	1	10.0
Others		
- Working committee	1	10.0
- Program facilitator	1	10.0
- Head of Extension Unit, Dept of Fisheries Malaysia (Sarawak)	1	10.0

* **Note:** Multiple responses allowed

Suggestions to better understand and practice extension methods

Nine participants suggested that learning and practicing extension methods should be on-the-job responsibilities. Eight participants emphasized that extension activities should provide knowledge to the target audiences. Six participants also expressed the need to organize field trips to visit areas where the best practices for appropriate extension methods are being advanced. Five respondents put emphasis on the monitoring and evaluation of the pros and cons of each method, and four respondents suggested that workshops on extension methods should also be conducted (**Table 3**).

Extension methods participants chose to work with small-scale fishers

During the focus group discussions, the participants had the common agreement that before selecting an extension method, extension agents should analyze and understand the geographical location of a particular community that they would be working with. They should also contact both formal and informal leaders to obtain their support and assess their needs. It should also be important to know what a community needs after which such needs are ranked according to the availability of resources, equipment and facilities. The proper extension methods to be adopted should focus on training to promote improvement of the livelihoods of small-scale fishers. There was a case study in Sarawak State of Malaysia where group method of extension was introduced to small-scale fishers through demonstration on the construction of fiberglass boats, and where the benefit of using fiberglass boat compared to a wooden boat was emphasized.

Ascertaining the impact of extension methods on livelihoods of small-scale fishers

The participant-respondents gave clear evidences of extension methods they chose to ensure the impact on the well-being of small-scale fishers (**Fig. 3**). In the study conducted in Sarawak, the benefits that fishers gained during their participation in the training program on fiberglass boat construction are shown in **Box 3**. The information received through monthly reports from fishers included period of fishing activities, fuel consumption, total harvest (kg or metric tons) and income from sale of fish catch (in Malaysian Ringgit).

Discussion

Ten participants in the International Training Course on Coastal Fisheries Management and Extension Methodology had varied background. Five have been directly involved with extension programs. The participants agreed that the basic requirements before selecting extension methods should include: having experience in the practice of each method, having enough knowledge in each extension method, and understanding the application of each method. In order to fulfill the implementation of the extension methods, the extension agent should be supported in terms of sufficient budget, knowledge and skills by the concerned agencies. Demonstration and training were selected as appropriate tools in working with small-scale fishers. As illustrated in the results of implementing the training on fiberglass boat construction, some impacts on the livelihoods of small-scale fishers in Sarawak State of

Table 3. Factors relating to an implementation of extension methods (N=10)

Factors relating to an implementation of extension methods	Number	Percent
Basic requirements prior to selecting extension methods*		
Analyzing geographical location, composition and background of target audiences before selecting an extension method	3	30.0
Having enough knowledge in each extension method	6	60.0
Understanding the application of each method	6	60.0
Having experience in the practice of each method	7	70.0
Evaluating the pros and cons of each method	4	40.0
Having enough budget to implement each method	4	40.0
Having enough educational background to adopt an extension program	1	10.0
Problem when adopting the extension methods*		
Not having appropriate knowledge to use a particular extension method such as in inboard and outboard engine repair, fiberglass boat construction	5	50.0
Not having appropriate equipments	2	20.0
Not having appropriate skills	3	30.0
Not having enough budget to implement a particular extension method	6	60.0
Community leaders not strong enough to adopt an extension program	1	10.0
Suggestions to better understand and practice extension methods*		
Providing knowledge on extension methods	8	80.0
Providing workshops on extension methods	4	40.0
Organizing field trips to visit the best practice of appropriate extension methods	6	60.0
Monitoring and evaluation the pros and cons of each method	5	50.0
Learning and practicing extension methods should be on-the-job responsibility	9	90.0

* **Note:** Multiple responses allowed

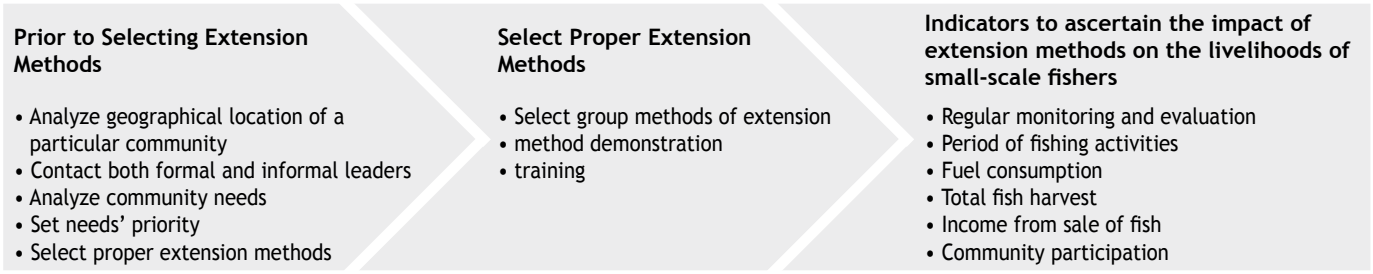

Fig. 3. How to ascertain the impact of extension methods on the livelihoods of small-scale fishers

Malaysia had been established. These findings were as same as the outcomes shown in the study by Rangsipaht *et al.* (2010) and Brown (2004) which suggested that training should be the extension method to be pursued in working with small-scale fishers. The impacts of training on the livelihoods of fishers should include enhanced human capital in terms of confidence building and awareness of rights, social capital such as group belongingness, access to network of fishers and access to credit and NGO's financial capitals in order to gain more profit from fish culture.

Conclusion and Recommendations

Ten participants from seven countries attended the International Training Course on Coastal Fisheries Management and Extension Methodology organized by SEAFDEC/TD on 2-26 November 2010. Five participants had direct involvement in approximately 3.9 extension programs on the average. They had worked either as program supervisor, coordinator, responsible of program, evaluator, working committee or Head of Extension Unit. The extension methods the participants chose to adopt with small-scale fishers were demonstration and training methods as these had illustrated some impacts on the livelihoods of small-scale fishers in terms of cost reduction, lower maintenance, expansion of fishing activities, increased fish catch and income. Based on the research findings, the recommendations made by the participant-respondents were summarized as shown in **Box 4**.

Box 3. Benefits gained by fishers from training program on fiberglass boat construction in Sarawak, Malaysia

1. Expand life span of fiberglass boat to 3-4 years whereas life span of wooden boat was 1-2 years
2. Reduce the cost of fuel since the drag force of the fiberglass boat is less than that of a wooden boat
3. Reduce or lower maintenance cost for operating fiberglass boats, especially that costly resin is not used as glue for repairing the boats.
4. Expand the period of fishing activities
5. Improved quality of catch
6. Increased income

Box 4. Recommendations from the case study

1. Extension methods varied from individual to group and mass contacts. To implement each method, one should have experienced in the practice of each method, and should have gained enough knowledge and understanding of the application of each extension method.
2. Learn and practice the extension methods through on-the-job training by providing knowledge, organizing field trips to visit areas where the best practice of appropriate extension methods are carried out, and monitoring and evaluating the pros and cons of each method would be useful to understand and practice the extension methods.
3. To sustain livelihoods of small-scale fishers, improvements in terms of their physical assets such as housing, transportation, sanitation, electricity should be investigated along with the environmental changes such as amount of fish cultured in small canals, drains and ditches before and after the training. This could help to ascertain the impact of training as the extension method adopted on the well-being of small-scale fishers and fish farmers.

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About the Authors

Dr. Savitree Rangsiphat is Associate Professor from the Department of Agricultural Extension and Communication, Faculty of Agriculture, Kasetsart University, Bangkok 10900, Thailand.

Dr. Supaporn Thaipakdee is Associate Professor from the Department of Agricultural Extension and Communication, Faculty of Agriculture Kamphaeng Saen, Kasetsart University, Kamphaeng Saen Campus, Nakhon Pathom 73140, Thailand.