



## PROSPECTUS

### FAO Expert Workshop on Indicators for Assessing the Contribution of Small-Scale Aquaculture (SSA) to Sustainable Rural Development

6-8 August 2009  
Tagaytay, Philippines

#### I. Background

The Aquaculture Management and Conservation Service (FIMA), Fisheries and Aquaculture Management Division (FIM) of the Fisheries and Aquaculture Department of FAO under its 2009 Programme Work and Budget is implementing a project entitled “Methods and indicators for the appraisal and evaluation of aquaculture for sustainable rural livelihood development” under Programme Entity (PE) 21PO2003008. This project which commenced in 2008 is being carried out through a combination of commissioned thematic papers, an expert workshop (Nha Trang Workshop in November 2008) and implementation of pilot case studies.

The FAO Expert Workshop on Methods and Indicators for Evaluating the Contribution of Small Scale Aquaculture to Sustainable Rural Development, locally hosted by Nha Trang University, held from 24-28 November 2008 in Nha Trang, Viet had three major objectives: (1) to better understand the general concepts and principles behind sustainable indicators and their application to various sectors and specifically to small-scale aquaculture using the three scales of small scale aquaculture production, i.e. (a) as the major livelihood of a community, (b) as part of an integrated farming system, and (c) as one of several livelihood activities in a community; (2) to draw up a list sustainability indicators as well as methods that will evaluate and appraise the contribution of small-scale aquaculture to sustainable aquaculture and to rural livelihood development through the knowledge gained from the thematic reviews and through a facilitated workshop; and (3) to prepare a number of case study concepts using the indicators and methods identified which will be implemented during Phase 2 of the study to commence in 2009.

Twenty five experts with a wide range of expertise/specialization in the field of aquaculture, rural development, ecology, economics, sociology and geography in Asia and Africa, participated in the expert workshop.

**Agreed definition of small-scale aquaculture (SSA).** The Nha Trang expert workshop agreed on a definition of small-scale aquaculture (SSA) that will be the basis for selecting the types of SSAs to be used for the pre-testing and pilot testing of the SSA contribution indicators (Nha Trang SSA indicators). The definition is:

**Small-scale aquaculture** is a continuum of (1) systems involving limited investment in assets, some small investment in operational costs, including largely family labor and in which

aquaculture is just one of several livelihood enterprises and generally using informal management structure (also known as rural aquaculture) and (2) systems in which aquaculture is the principal source of livelihood, in which the family/operator has invested substantial livelihood assets (time, labor, infrastructure and capital) and may or may not be organized as an enterprise.

**Process of drawing up indicators.** The workshop deliberated on a number of conceptual frameworks [e.g. pressure state framework, ecosystem service framework (5 sustainable livelihood capitals); sustainable livelihood framework (sustainable livelihood asset pentagon); triple bottom line framework (economic, social and environmental); SMART framework (specific, measurable, accurate, repeatable, timely) which were used for free listing of more than 50 indicators. About 20 indicators were shortlisted based on agreed framework and criteria, i.e., its contribution to sustainable rural development (natural capital, physical capital, human capital, social capital and financial capital) and ease of measurability (quantifiable or qualitative), accuracy, efficiency (cost effectiveness) and including means of measurement.

**Pretesting and pilot testing of Nha Trang SSA contribution indicators.** General planning and implementation of pretesting and pilot testing were carried out from December 2008 until March 2009. Three Project Teams (consisting of a team leader, an aquaculturist, a socio-economist and data enumerators/collectors) from the Philippines (University of the Philippines at Los Banos), Thailand (Kasetsart University) and Viet Nam (Nha Trang University) were assembled. An additional team from Bangladesh is being assembled<sup>1</sup>. The pretests and pilot tests using two types of SSA per country were conducted from March until May 2009.

**Finalising the list of indicators.** A Project Team meeting held from 20-23 March 2009 at the Department of Agriculture and Resource Economics, Faculty of Economics, Kasetsart University participated by Project team leaders from the Philippines, Thailand and Viet Nam finalised the Nha Trang indicator list and survey questionnaires after deliberating on the outcomes of the pre-test and initial pilot testing undertaken by Thailand. Table 1 shows the final list of indicators (down to 14 from the 20 shortlisted indicator during the Nha Trang workshop) with a short description of its contribution, a brief explanation, means of verification and methods of data collection.

## II. Purpose

The objectives of this expert workshop are:

- (1) to present the outcomes (results and analysis) of the case studies which pilot-tested the Nha Trang SSA contribution indicators to various types of SSA in Bangladesh, Philippines, Thailand and Viet Nam;
- (2) to present the cross-country analysis and synthesis based on the outcomes of pilot testing of Nha Trang SSA contribution indicators; and
- (3) to refine and validate the indicators and evaluate their robustness, replicability and applicability in helping measure SSA sector performance for wider adoption and use

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<sup>1</sup> Still tentative, when support is confirmed, this will potentially provide additional pilot tests under the Bangladesh Regional Fisheries and Livestock Development Project, Noakhali Component, Agricultural Sector Programme Support, Phase II).

- (4) to draw up a list of recommendations to further support (e.g. appropriate interventions, priority setting and resource allocation) to the SSA sub-sector of sustainable aquaculture and rural development programmes based on a broad understanding of sector performance (as measured by indicators) as well as risks and threats.

### III. Participation

The expert workshop will be organized by FAO and participated by the Project Teams (from the Bangladesh, Philippines, Thailand and Viet Nam), experts, and government representatives (information and statistics). Invitation will also be extended to development and aid/donor agencies interested in small-scale aquaculture development, sustainable rural development (e.g. World FishCenter, Asian Development Bank, Network of Aquaculture Centres in Asia and the Pacific, SEAFDEC-AQD and others).

Due to limited funding, only a core group of 12-15 participants will be funded. Interested parties are encouraged to participate on a self-funding mechanism or other possible cost-sharing arrangements.

### IV. Process and Products

There will be three sessions: (1) Session 1 will present the outcomes of the case study pilot tests undertaken in the Bangladesh, Philippines, Thailand and Viet Nam (6 presentations); (2) Session 2 will present the outcomes of cross-country analysis and synthesis and deliberate, through two working groups on the following: (2.1) refine and validate the indicators and evaluate their robustness, replicability and applicability for wider adoption and use; and (2.2) draw a set of recommendations that will provide support to the development of the SSA sub-sector; and (3) Session 3 will present the conclusions and the way forward. It is generally planned that the working documents (i.e. background documents, country case study reports and cross country analysis and synthesis) will be distributed to participants by mid-July 2009.

The workshop will be held over a three-day period (3<sup>rd</sup> day is field trip and optional for participants) from 6 to 8 August 2009 in Tagaytay, Philippines to be hosted by the University of the Philippines at Los Banos (UPLB).

The expected outcomes of the workshop are:

- increased knowledge on field application (means of verification and data collection methods) of Nha Trang SSA indicators
- specific country case study analysis of the strength and usefulness of Nha Trang SSA indicators
- field application limitations and lessons learned
- enhanced understanding of the importance of SSA and the importance of measuring the contribution of SSA (based on evidence and statistics from pilot tests) to support aquaculture development and rural development programmes
- robustness, strength and usefulness of these indicators and their potential for replicability and applicability (to other regions and other SSA types) for wider adoption and use
- set of recommendations that will provide support to the further development of the SSA sub-sector of sustainable aquaculture and rural development programmes based on a broad understanding of sector performance (as measured by indicators) as well as risks and threats.

- workshop report

## V. Workshop Secretariat

More detailed information can be obtained from:

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## Workshop agenda

Date and time	Activities
<b>5 August, Monday</b>	Arrival of participants
<b>6 August, Thursday</b>	
08.30–09.00	Registration
09.00–09.10	Short video-clip: Small-scale aquaculture
09.10–10.00	Welcome Address from the Governor of Batangas Province (Mrs Vilma Santos-Recto) Opening Remarks Director of the Philippine Bureau of Fisheries and Aquatic Resources (Atty Malcolm Sarmiento) Remarks from FAO Representative in the Philippines (Mr. Kazuyuki Tsurumi) Remarks from Chancellor of the University of the Philippines at Los Banos (Dr. Luis Rey Velasco) Self-introduction of participants Moderator: Dr. Victoria Espaldon
10.00–10.30	Coffee Break
10.30–10.45	Workshop Objectives (Dr. Melba B. Reantaso, FAO) Election of Session Chairs (3) and Rapporteurs (3)
	<b>Session 1</b> (to be introduced by Chairperson 1) Objectives of the session <ul style="list-style-type: none"> <li>➤ To present the outcomes of the pilot testing of Nha Trang SSA indicators undertaken in Thailand, Philippines, Viet Nam and Bangladesh</li> </ul> Expected outcomes of the session <ul style="list-style-type: none"> <li>➤ increased knowledge on field application (means of verification and data collection methods) of Nha Trang SSA indicators</li> <li>➤ specific country case study analysis of the strength and usefulness of Nha Trang SSA indicators</li> <li>➤ field application limitations and lessons learned</li> </ul>
10:45–11:15	<b>Presentation 1:</b> Development of Indicators for Assessing the Contribution of Small-Scale Aquaculture to Sustainable Rural Development (Dr. Melba B. Reantaso, FAO)
11.15–11.45	<b>Presentation 2:</b> Thailand Case Study: pond polyculture (integrated farm with a mix of freshwater species stocked in ponds or ditches) and catfish farming in plastic lined ponds Dr. Tipparat Pongthanapanich (Kasetsart University)
11.45–12.30	Discussion
12.30–14.00	Lunch break
14.00–14.30	<b>Presentation 3:</b> Philippines Case Study: tilapia cage and seaweed farming Dr. Victoria Espaldon (University of the Philippines at Los Banos)
14.30–15.00	<b>Presentation 4:</b> Viet Nam Case Study: lobster cage culture and fish/shrimp pond polyculture Dr. Huu Dung Nguyen (Nha Trang University)
15.00–15.30	<b>Presentation 5:</b> Bangladesh Case Study: rice-freshwater prawn-carps/vegetable and rice-fish rotational systems in seasonally flooded rice fields (tentative, to be confirmed) Dr Harvey Demaine (Bangladesh Regional Fisheries and Livestock Development Project, Noakhali Component, Agricultural Sector Programme Support, Phase II)

15.30-16.00	Coffee break	
16.00-17.00	Discussion	
<b>7 August, Friday</b>		
08.30–08.45	<p><b>Session 2</b> (to be introduced by Chairperson 2)</p> <p>Objectives of the session</p> <ul style="list-style-type: none"> <li>➤ To present the outcomes of cross country analysis and synthesis of the outcomes of the pilot testing of Nha Trang SSA indicators</li> <li>➤ To break into two working groups that will deliberate on the following: (1) refine and validate the indicators and evaluate their robustness, replicability and applicability for wider adoption and use; and (2) draw a set of recommendations that will provide support to the development of the SSA sector</li> </ul> <p>Expected outcome of the session</p> <ul style="list-style-type: none"> <li>➤ enhanced understanding of the importance of SSA and the importance of measuring the contribution of SSA (based on evidence and statistics from pilot tests) to support aquaculture development and rural development programmes</li> <li>➤ robustness, strength and usefulness of these indicators and their potential for replicability and applicability (to other regions and other SSA types) for wider adoption and use</li> <li>➤ set of recommendations that will provide support to the further development of the SSA sub-sector of sustainable aquaculture and rural development programmes based on a broad understanding of sector performance (as measured by indicators) as well as risks and threats.</li> </ul>	
08.45-09.30	<p><b>Presentation 6:</b> Cross Country Analysis and Synthesis of the Outcomes of Pilot Testing of Indicators for Measuring the Contribution of Small Scale Aquaculture to Sustainable Rural Development: Philippines, Thailand and Viet Nam Case Studies Dr Roehlano Briones (Philippine Institute for Development Studies)</p>	
09.30-10.00	<b>Discussion</b>	
10.00–10.30	Coffee Break	
10.30–10.45	<b>Presentation 7:</b> Working Group Guidelines	
11.30–12.30	Working Group discussion	
	Working Group 1: Refining and validating the indicators and evaluate their robustness, replicability and applicability for wider adoption and use	Working Group 2: Drawing up a set of recommendations that will provide support to the development of the SSA sub-sector of sustainable aquaculture and rural development programmes
12.30–14.00	Lunch Break	
14.00–16.00	Continue Working Group discussion	
16.00-17.30	Presentation of Working Group outcomes and discussion	
17.30-18.30	<b>Session 3</b> (Conclusions and way forward to be presented by Chairperson 3)	
19.00 -	Dinner (and closing)	
<b>8 August, Saturday</b>		
08:30–17.00	Field trip/departure of participants	



**Table 1. Nha Trang Small-Scale Aquaculture Indicators (FAO, 2009).**

<b>Contribution</b>	<b>Indicators</b>	<b>Explanation</b>	<b>Means of Verification</b>	<b>Methods and data collection</b>
<b>Natural capital</b>				
1. Efficient use of materials and energy saving	<b>1. Types and Number of nutrient flows</b>	Recycling of household and farm waste and by-product among various farm enterprises improve material use and save energy.	Farm survey - questionnaire	- Ocular observation of farm - Developing a schematic diagram with farmer that depicts material flows in the farming system - Use the RESTORE model as a template (FAO, 2009)
2. Efficient use of water	<b>2. Number of farm production uses of water</b>	Reuse of water in a farm indicates an efficient use of water resource. This contributes to environmental sustainability.	Farm survey - questionnaire	- Ocular observation of farm - Developing a schematic diagram with farmer that depicts the flow of water uses in the farming system.
<b>Physical capital</b>				
3. Build up of SSA farms and farm assets in rural area	<b>3. Number of SSA farms and farm areas increased over 3 years in the study area</b>	Increase of SSA farms and expansion of farm areas indicate growth in physical capitals due to SSA <u>Remarks:</u> - This contribution can be induced by programs not solely targeted at SSA. - The trend might be contraction.	- Key informant survey - Farm survey - questionnaire	- Discuss with village head on Number of SSA farms and farm areas increased over 3 years in the study area - Ask farmer about farm enterprises and land use changes over 3 years (2006-present)
4. Build up of rural physical assets	<b>4. Types and number of rural infrastructure investment induced by SSA</b>	SSA induces a building up of rural physical assets (such as water system, rural market, rural road, and energy distribution system).	- Key informant survey - Farm survey - questionnaire	- Discuss with village head on number and types of rural infrastructure investment induced by SSA - Cross-check by asking farmer about types of rural infrastructure investment induced by his/her SSA business
5. More efficient use of built physical assets in rural area	<b>5. Types and number of rural infrastructure investment induced not purposely for SSA but benefit SSA</b>	More sectors including SSA using the built infrastructure would lead to a more efficient use of the assets.	Farm survey - questionnaire	Ask farmer about the village infrastructure being used and shared with other households.



<b>Human capital</b>				
6. Food and nutrition security	<b>6. Per capita annual consumption of fish in SSA household. (Only fish for their own SSA harvest.)</b>	The high per capita consumption indicates a more food and nutrition security that SSA provides.	Farm survey - questionnaire	Ask farmer about the amount of fish harvest and the allocation of the harvest for household consumption that included fresh and processed products.
7. Seasonal food security	<b>7. Season of the year when household relies more on their own harvest than on fish from other sources</b>	SSA contributes to seasonal food security if there is a season that household consumption much relies on their own fish harvest rather than on buying or fishing.	Farm survey - questionnaire	Ask farmer: - Which months in a year when farmer harvests fish for household consumption and how much for each month - Substitution fish or protein sources when farmer does not harvest fish (processed fish, get from friend and relatives, fishing, eat other proteins, etc.)
<b>Financial capital</b>				
8. Household cash income	<b>8. Percentage of cash income from SSA to total household cash income</b>	This indicates reliance of the household on SSA for its cash income i.e. liquidity	Farm survey - questionnaire	Ask farmer to indicate the percentage rather than the absolute amount of income.
9. SSA serves as a source of household economic security	<b>9. Economic return from SSA to household</b>	This indicates the household economic value obtained from SSA when both cash and non-cash returns/ /opportunity and economic forgone are considered.	Farm survey - questionnaire	- Ask farmer on economic costs and revenue from SSA operation. Cash (tangible costs and revenue) and non-cash (intangible costs and revenue) data are classified. - Cost-return analysis (amount/unit/year)
10. Contribution to provincial economy	<b>10. Percentage of economic value from SSA production to the value of production from all aquaculture in the province</b>	This measures the relative importance of SSA in provincial aquaculture sector.	Government statistics	- From the statistic data, classify the SSA systems and species in the study province - Estimate the SSA production value by systems and species - Calculate the sum of the SSA production value and the percentage can be calculated.

<b>Social capital</b>				
11. Social participation	<b>11. Percentage of farm households are active members of SSA programs/ associations/ organizations</b>	The higher the percentage indicates the higher social participation brought by the SSA programs/ associations/ organizations	- Key informant survey - Farm survey - questionnaire	- Discuss with DOF local official and village head on the SSA programs/ associations/ organizations existing - Ask farmer about program/ association/ organization participation and then ask about type of activities, time spent, number of meeting per year participated, cost and benefit from being member. - From the above information, the active SSA household members can be noted for the calculation of the percentage.
12. Women empowerment	<b>12. Percentage of number of SSA farm activities in which women take the major decision-making role</b>	The degree to which the women are involved in various activities associated with SSA and in decision-making pertaining to SSA operations and household management	Farm survey – questionnaire by checklist of activities	Develop a checklist of decision-making in farm and household operation activities: 1) starting the farm business 2) taking care of the farm operation 3) buying/procuring farm inputs 4) Selling/distributing of the harvest 5) keeping income and record 6) allocating household expenses 7) borrowing money
13. Fostering social harmony	<b>13.1 Number of SSA households that share fish products and other farm resources</b> <b>13.2 Number of activities in which farmers work together as to improve the shared resources in the community (such as water system, road and reservoir)</b>	Sharing of farm products, farm resources and cooperating in community activities foster social harmony	Farm survey – questionnaire	Interview farmer on: 1) share of the fish products and other farm resources with other community members 2) types of activities in which farmers help each other to improve the shared resources in the community
14. Providing social safety net	<b>14. Ratio of family labours who previously worked solely or mainly in non-SSA (incl. off-farm jobs) but now work in SSA (X) to total family labours (Y)</b>	Increase family labor in SSA indicates the importance of SSA as a fallback employment/ an opportunity to non-SSA and off farm jobs and an alternative source of income.	Farm survey - questionnaire	- Check list of family members and employment status over 3 years - Calculate X:Y ratio