

AFSPAN Work Package 4

Methodological guidelines prepared for case studies

Deliverable 4.1



Methodological guidelines prepared for case studies

The methodology for this work package was developed by participants during the inception workshop, and has been refined following this event. A detailed research methodology has now been developed. It essentially involves a combination of review of secondary data and case studies of enterprises, institutions and enabling conditions in selected countries. The countries have now been identified, and enterprises (and associated value chains) are being analysed in three selected case study countries; these are Bangladesh, India and Ghana.

In Bangladesh the case studies will make use of data on the impacts of aquaculture on employment, livelihoods and agrarian structure from a structured survey of more than 600 households from six communities with high concentrations of aquaculture development.

The study is designed to answer five key research questions:

- 1) To what extent do the poor participate in aquaculture?
- 2) How do landholdings affect participation in aquaculture, and how does aquaculture development affect land use and land tenure arrangements?
- 3) What is the extent and nature of employment generation associated with aquaculture?
- 4) How does aquaculture development affect local food security?
- 5) How does aquaculture development affect social wellbeing?

The study and its methodology are innovative and unique in scope, being the first of its kind to apply fully integrated mixed methods to the study of aquaculture in Bangladesh, or to systematically apply the concept of social wellbeing (Weeratunge et al, 2013) to aquaculture. Measurement of food security was conducted using tools developed by the USAID-funded FANTA II project, namely the household dietary diversity score, and household food insecurity and access scale.

The survey covered both producing and non-producing households, and was complemented by an integrated qualitative evaluation of community wellbeing. In keeping with the trend toward use of mixed qualitative and quantitative methods in the analysis of poverty over the last decade, (Shaffer et al., 2008), this study sought to achieve 'methodologically integration' (Davis and Baulch, 2011). To this end, fieldwork comprised of semi- or unstructured interviews and focus group discussions with a wide range of actors was nested inside a 'large n' structured household survey, designed to be statistically representative at community level. The intention in doing so was to generate robust quantitative data on certain aspects of poverty and livelihoods such as household expenditures, landholdings and employment, alongside more finely grained contextual and historical perspectives on changes in the communities surveyed and subjective aspects of wellbeing. Conducting research in this manner had the additional advantage that insights from qualitative work could be used to crosscheck incoming survey data, and reorient data collectors when problems emerged, while potential interviewees with characteristics of interest could be identified from the structured survey.

Villages were chosen as the most obvious 'natural' units of study, and were selected based on the presence of high concentrations of various contrasting types of aquaculture. The survey covered two pangasius farming clusters with different characteristics, a giant freshwater prawn cluster, a black tiger shrimp cluster and two villages where the main form of aquaculture was low intensity carp polyculture. A

high degree of heterogeneity in physical geography, agro-ecology, infrastructure, socioeconomic status and the nature and extent of aquaculture development was readily apparent when visiting potential study villages. In recognition of this diversity, pairs of communities with sharply contrasting characteristics were chosen. Those ultimately selected had very high concentrations of farms, but fell at opposing ends of a spectrum running from high to low levels of direct participation in aquaculture by smallholders (pangasius); salinity and extent of agricultural integration with aquaculture (shrimp and prawn); and propensity to consume fish for subsistence or sell to the market (homestead carp polyculture). Additional key informant interviews and a review of secondary information will provide contextual information on the institutional conditions of aquaculture development in Bangladesh.

India is the second largest aquaculture producer in the world, and the state of Andhra Pradesh produces close to two thirds of India's farmed fish. Despite its remarkable significance as a centre for aquaculture production, no study to date has attempted a comprehensive analysis of the status, and poverty and food security implications of aquaculture development in the state. The research methodology employed was designed to document the development outcomes of fin-fish aquaculture in Andhra Pradesh, with a particular focus on the enabling institutional conditions, arrangements and public-private partnerships which enabled dramatic booms in the production of Indian major carps and pangasius catfish. A review of secondary materials was augmented by a rapid appraisal and interviews with key private and public players in the sector, including farmers, hatchery operators, feed manufacturers, packers and traders, government fisheries officials, scientists, laboratory operators, private technicians and consultants.

The research was conducted in three main phases:

- 1) Compile and summarize secondary information, record existing knowledge and conduct key informant interviews as necessary to identify the present composition of the aquaculture sector in Andhra Pradesh - i.e. document as far as possible the main aquaculture systems (including area covered, average farm size, numbers of operations, level of investment, typical yields, common management practices), species produced (including quantities and market value), types of operation (small-scale, SME, etc.), market orientation (domestic, rural, urban, international, market size), location of aquaculture clusters (main districts/sub-districts), support services (e.g. location, number and capacity of hatcheries, feed mills, etc.).
- 2) Based on the information sources listed above, provide historical perspective on the development of major aquaculture systems in key locations (identify drivers for aquaculture development –e.g. important events, institutions, businesses, individuals, policies, infrastructure, economic activities etc. which shaped the development of these systems). The focus was on inland aquaculture, though information relating to the development of coastal shrimp was also collated where relevant to the development of inland fish culture.
- 3) Select key aquaculture systems, enterprise types and locations (e.g. sub-districts) for further study, for the development of comparative case studies within and between countries, and visit the proposed research locations to assess their suitability for conducting case studies and select final field sites. Conduct a rapid appraisal based on interviews with purposively selected key informants. Data gathering focussed primarily on the impacts of aquaculture on poverty and food security in communities where selected aquaculture systems have developed (e.g. social and economic characteristics of producers and workers in aquaculture value chains, the scale and nature of employment opportunities generated, conflicts, gender implications, environmental impacts, changes

in food consumption patterns/habits, changes in access to land/resources, land use, tenure systems, landholding sizes, changes in cropping patterns, changes in livelihoods etc.).

In Ghana, case studies on large scale commercial tilapia cage culture and small-scale low intensity pond culture built upon recently completed ground breaking doctoral research investigating spill-over effects and 'consumption linkages' in the local rural non-farm economy associated with both forms of aquaculture. This was supported by an institutional analysis of enabling conditions for aquaculture development in Ghana. Data were collected from a variety of primary and secondary sources during fieldwork in Ghana. The most important of these are key informant interviews with relevant public and private actors within the aquaculture sector. Relevant secondary literature was also reviewed. An overview of the aquaculture sector was based on secondary data including government reports, published articles and studies, and grey literature, supplemented with information gathered from key informant interviews.

The analysis of aquaculture poverty impacts in Ashanti and Eastern Regions builds on the findings of Kassam (2013) and was supplemented with information from interviews with: Fisheries Commission (FC) staff from Ashanti and Eastern Regions; staff from the Water Research Institute (WRI) in Accra and Akosombo; a focus group discussion with small-scale pond aquaculture farmers in Ashanti Region (members of the Adansi Fish Farmers' Association); fingerling producers in Ashanti Region; and large-scale, medium-scale and small-scale cage farmers in Lake Volta, Eastern Region. The findings of Kassam (2013) are based on primary data gathered from fish farmers and communities in Ashanti and Eastern regions where aquaculture systems have developed. This work is extremely methodologically innovative, being the first study to apply the measurement of consumption linkages (economic multipliers caused by expenditures of incomes derived from aquaculture on other goods and services in the rural non-farm economy) to aquaculture. The discussion of enabling conditions for and drivers of development of the aquaculture sector is based on information gathered from key informant interviews.

One case study on institutional drivers of aquaculture development will be conducted by nine partner countries (see Table 1). The studies will examine the role of formal and informal institutions (and the relationships between them) in facilitating, or preventing, the development of forms of aquaculture which contribute to poverty alleviation and/or food and nutrition security. The case studies will be based on a common, structured format. Because there are overlaps between WP4 and WP5, the nine studies will contribute to both work packages. Dr. Belton will circulate criteria for case study selection, and request country representatives to identify the cases that they will use and provide a brief (1 paragraph) justification for their selection. Following this, structured guidelines for conducting the case studies will be circulated for comment and further clarification. It is anticipated that each completed case study will be 2-3 pages in length.

Table 1: Tentatively identified country case studies

Country	Tentatively identified case study
Brazil	Culture of indigenous fish species by cooperatives
China	Carp culture by co-operatives
Viet Nam	Conversion of wetlands to aquaculture
Uganda	Tilapia culture
Nicaragua	Shrimp farming by women's co-operatives
Chile	To be determined
Kenya	Small-scale pond aquaculture
Philippines	Small-scale seaweed cultivation
India	Culture based reservoir capture fisheries

Guidelines for WP4 country case studies

Country case studies for WP4 will contribute to two objectives:

- 4.2 Identify enabling institutional conditions and arrangements for aquaculture development
- 4.3 Identify successful public-private partnerships contributing to aquaculture development¹

The purpose of each case study is to provide a clearer understanding of conditions and arrangements which enable, or prevent, the development of aquaculture systems that alleviate poverty, reduce food security, or improve nutrition. Aquaculture systems are characterized by the species farmed, the intensity of production, the scale of production, and production environment (ponds, cages, tanks, etc)². Enabling conditions and arrangements can originate from the public sector, from the private sector, or from interactions between the two.

Aquaculture can contribute to poverty alleviation and food and nutrition security directly or indirectly. The adoption of small scale fish culture may reduce poverty and food insecurity directly by raising farm incomes and increasing consumption of nutritious fish. The development of commercial aquaculture may reduce poverty indirectly (e.g. by creating well-paid jobs), or increase food security indirectly (e.g. by reducing the price of fish available in the market, thus allowing poor households to consume more). The aquaculture system chosen for the case study should alleviate poverty or enhances food and nutrition security (directly or indirectly), and the case study should provide evidence of this.

¹ Here we consider to the term 'public-private-partnership' in a broad sense. These can be formal arrangements, such as the government providing funding for construction of a private farm, or informal arrangements, such as a public sector employee working as a consultant outside of office hours.

² Examples of aquaculture systems include: small-scale, semi-intensive carp polyculture; Large-scale intensive tilapia cage culture; Intensive pangasius pond culture; Small-scale integrated freshwater prawn and rice farming.

Each case study should identify conditions and arrangements which have contributed to (or prevented) the development of aquaculture systems that alleviate poverty, or which improve food and nutrition security. Examples of enabling conditions and arrangements for aquaculture development are listed in Table 2. This list is meant to provide an idea of the type of things to consider when writing the case studies. All the examples given in the table are positive, but conditions or arrangements may also negatively affect aquaculture development. (For example, a project might promote the production of a new species for which there is no local market, resulting in farmers losing money and putting them off trying aquaculture in future; a policy providing interest free bank loans to stimulate the development of the fish processing sector might result in overcapacity, inefficiency and low profits which cause processors to cut corners and produce low quality products, and ultimately inhibiting the sector’s growth). Case studies should consider both positive and negative examples, if they are relevant.

All country leaders are experts on aquaculture development in their respective countries and possess lot of ‘tacit’ (unwritten) knowledge which can be drawn upon to help complete the case studies. The exiting knowledge and experience of the person conducting the case study will therefore be one of the most important sources of information used to complete it. This knowledge can be supplemented by interviews with a small number of carefully chosen key informants, and/or through informal discussions with colleagues or other people who have a good understanding of the aquaculture system in question. The case studies should also aim to incorporate some supporting secondary information where appropriate (e.g. from policy documents, project reports, government statistics, academic papers).

Table 2: Examples of conditions and arrangements which contribute to aquaculture development

Conditions and arrangements	Examples
Policies	A policy which allows rice paddy to be converted into fish ponds, or allows feed ingredients to be imported tax free
Government organisations	A fisheries research institute which trains hatchery operators on how to spawn a new species of fish
Non-governmental organisations	An NGO which provides package of training and micro-credit to promote a new kind of aquaculture
Projects	A government funded research project that finds a treatment of a fish disease, or an aid agency funded project that provides training and extension to farmers
Companies	A company which sets up a contract farming scheme
Banks	A state agricultural bank which provides specially designed low interest loans to fish farmers
Co-operatives	A group of farmers who work together to implement best management production practices and obtain certification which facilitates access to a new market
Farmer’s associations	A group of producers which successfully lobbies the government to reduce taxes on aquaculture inputs

Conditions and arrangements	Examples
Entrepreneurs	The first hatchery, first feed mill, first cage farm, etc. to be established in an area, which acts as an example which other businesses copy
Informal credit providers	Middlemen who provide inputs to farmers on credit and buy back all the fish that they produce
Exceptional individuals	People with exceptional technical and personal skills which allow them to play a very influential role in promoting aquaculture (e.g. a very skilled hatchery technician who is also very dedicated worker and very good at communicating with farmers)
Informal relationships between public and private sectors	Government staff who promote aquaculture by acting as private consultants to farmers in their spare time
Technical innovations	Changes in management practices (e.g. digging deeper ponds, developing new systems of nursing, or altering recommended stocking densities) which allow farmers increase productivity or profitability
Complementarity with other sectors	The development of livestock farming or a food processing industry produces cheap by-products that can be used as inputs for aquaculture
Competitiveness with other sectors	Aquaculture gives higher financial returns per hectare of land than other types of agriculture, or requires less labour per hectare of land than other kinds of agriculture in a place where there are labour shortages

Case study structure

The list below provides a structure which the case study should follow. Approximate word counts are suggested for each case study section. The total length of each case study should not exceed three pages. One or two high resolution photographs which illustrate the case study should also be provided if possible.

- Section 1. Description of the aquaculture system which the case study is about – about 500 words (e.g. the geographical location, the species farmed, the system productivity (t/ha) and investment costs (\$/ha), typical farm size (ha), feeding practices; the production environment (cages, ponds, etc); employment generation; the main market (e.g. rural/urban, domestic/international, high value/low value); the main people and institutions involved (men/women, poor farmers, wealthy investors, companies, co-operatives etc.)
- Section 2. Brief description of the contribution the system makes to poverty alleviation/food and nutrition security – about 250 words. What are the main contributions in terms of poverty alleviation and/or food and nutrition security - i.e. are they direct or indirect (to producers, to

consumers, to employees, etc). Provide quantitative evidence if possible (e.g. number of jobs created, average incomes generated)

- Section 3. Describe the key conditions and arrangements which have made the development of this aquaculture system possible, or constrained its development – about 500 words. Give examples of the most important conditions and arrangements that facilitated or constrained the development of this aquaculture system. Why were they important? Did they originate from the public sector or the private sector? Were they formal (planned), or informal (unplanned)? What role (if any) did interaction between the public and private sector play any role in the sector's development?
- Section 4. Conclusion – about 250 words. Summarize the most important lessons from the case study with respect to how and why the conditions and arrangements identified contributed to poverty alleviation or improved food security and nutrition outcomes.

References

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