

The Katalyst Cases



Case Study Number 4

Accelerating Growth in the Pond Fish Sector
Interventions to bring about sustainable change

Produced by

Katalyst Bangladesh
A project supported by DFID, SDC and SIDA and implemented by
Swisscontact and GTZ International Services

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July 2007

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List of Abbreviations Used

BDT	Bangladeshi Taka
BFRI	Bangladesh Fisheries Research Institute
BMO	Business Membership Organization
DAE	Department of Agricultural Extension
DANIDA	Danish International Development Agency
DFID	Department for International Development
DOF	Department of Fisheries
FTEP-II	Fisheries Training and Extension Project, Phase II
GDP	Gross Domestic Product
GTZ	German Agency for Technical Co-operation
IDE	International Development Enterprise
IFAD	International Fund for Agricultural Development
SDC	Swiss Agency for Development and Cooperation
SIDA	Swedish International Development Agency
NGO	Non-Government Organization
USAID	United States Agency for International Development
USD	United States Dollar
YDD	Youth Development Department

Preface

Several Asian neighbours of Bangladesh have shown that poverty can be reduced impressively in a short time. In these countries, the private sector was the main engine behind the reduction in poverty. Throughout the developing world, projects like Katalyst try to unlock similar poverty reduction engines. With this case study, Katalyst wants to contribute to the knowledge and experience of all those who work for the same goal.

Over the past five years, Katalyst has developed an approach to make structural changes in the private sector in Bangladesh. Understanding the private sector, finding the potential agents of change and making deals with them that benefit the poor are important elements of this.

This case study on pond fishery in Faridpur tells about these elements. It explains how to unlock economic potentials and how to create economic incentives to change the way fish farmers work. The study also tells how to reach many farmers in an efficient way, while asking if the changes really address the structural problems or just symptoms.

The case study on pond fishery is interesting for several reasons:

- * It is based on extensive data and research, making lessons and claims much more valuable.
- * It explains how embedded services can be applied and how successful they can be.
- * The study also discussed the central role of a business association in the development of the fish market in Faridpur; an association in the role of innovator and maybe even a facilitator in the long run?
- * The extensive dataset allowed studying who benefited most from Katalyst support. It reveals interesting lessons for the pro-poor growth discussion.

Marieke de Ruyter de Wildt of the Springfield Centre has followed Katalyst's work in fish for two years. She designed specific surveys and conducted a large number of interviews to understand what really happened. Harald Bekkers and a number of his colleagues in the Industry and Rural Sectors Division of Katalyst played an important role in facilitating the studies and interpreting the data. Like in all our case studies, the author was solely responsible for the content and text of the case study.

Marieke's findings have certainly contributed to Katalyst's thinking about issues like dealing with associations and how to impact on the poor. We hope the study will be equally useful to your organization and are very interested in your feed back.

Peter Roggekamp
General Manager
Katalyst

Summary

While pond fish has been one of the fastest growing agricultural sectors in Bangladesh as a whole, its growth in the Faridpur region has been well below the national average. Unused ponds, low productivity and low output have meant that the potential scale of benefits for the Faridpur economy and for poor people within it have not been realised. This case examines the experience of Katalyst in addressing the underlying causes of weak performance in Faridpur's pond fish sector.

Consistent with their market development approach, Katalyst prioritised various key constraints in the value chain and worked with a variety of players to address these. Its key interventions – facilitating the development of a physical fingerling market, strengthening fisheries associations and providing nursery training – share a number of characteristics:

- Choosing appropriate partners: Building a relationship with local partners who have the potential and ambition to become agents of change.
- Sequencing according to market dynamics: Ensuring that the pace and order of interventions emerge from interactions with market players.
- Strengthening market based relationships and improving practices: Establishing new and strengthening existing relationships between buyers and sellers at different levels by bringing in new information and standards.
- Building ownership: Matching actions with partners' capacities at every stage, encouraging leadership and testing commitment through cost-sharing.

Katalyst's 2 to 3 year period of engagement has been relatively low-cost (\$63,000) and has emphasised technical (rather than financial) assistance. Drawing on a detailed impact assessment survey with 563 respondents, it is clear that it has brought about discernable systemic changes in the sector:

- Stronger associations: Organisational structures have improved, memberships have doubled and associations are more representative of the sector; lobby capacity and activities are growing, and members show increasing levels of satisfaction.
- Improved knowledge and information flows: Nurseries, farmers and hawkers increasingly acknowledge the value of information and ascribe a strong role to associations for bringing in new knowledge. Knowledge and information have a greater role in the pond fish "business model".

These changes have, in turn, caused a major improvement in business performance. Among half the farmers (13,600), half the nurseries (400) and the majority of hawkers (4400), productivity has improved. This has resulted in wider benefits for poor people, in particular through greater employment (nearly 4,500 additional seasonal farm jobs), better performance and higher incomes for smaller (and poorer) farmers and higher consumption of fish (the main source of animal protein).

Importantly, and unlike previous experiences in pond fish, interventions here have built change within the sector's market players and mechanisms. With the capacity and incentive to continue to change, this suggests that benefits can be sustained – and can grow – into the future. Katalyst's experience reaffirms that growth processes can be influenced to be made more effective and more inclusive. The case also highlights key lessons and challenges in engaging in value chain development, particularly with respect to how to engage with partners (such as associations) and the importance of process in (and therefore appropriate time for) interventions.

1. Introduction

The pond fish sector in Faridpur, Bangladesh, has great potential for wider development. Intense pressure on capture fisheries and increasing profitability has drawn more people into cultivating pond fish and, as a consequence, production has expanded greatly in the past few years. Yet, output levels in Faridpur are still low compared to other regions of the country and its potential remains largely unfulfilled. In order to enhance overall growth and realise more benefits from the sector, especially for poor people, a number of underlying constraints need to be addressed. Catalyst's work in pond fish cultivation set out to address these fundamental problems.

This case focuses on three specific Catalyst interventions: access to inputs, access to advice, and the role of sector associations in developing the sector. Drawing on data from extensive fieldwork, it analyses the overall experience and the impact of these interventions and highlights the implications for the wider development community. In describing and analysing Catalyst's work and approach, the paper's purpose is to add to learning in the wider development community.

The paper is structured as follows. Section Two establishes the wider context of the pond fish sector and defines the productivity problem it faces. Section Three analyses the underlying causes of this problem and in particular of the traditional cultivation practices and lack of quality inputs. Section Four sets out Catalyst's approach to addressing these by partnering with a fisheries association, strengthening market linkages and improving the quality and intensity of knowledge and information exchange. How these interventions raised output and productivity among key market players (nurseries, farmers and hawkers), impacted on the wider sector and generated benefits for poor families is discussed in Section Five. Finally, Section Six presents the main lessons from this experience. Annex One outlines how Catalyst's way of working has evolved over time. Annex Two gives additional details on other Catalyst interventions in the pond fish sector. Annex Three summarises the survey methodology. Annex 4 contains a number of mini-profiles of change among market actors.

2. The overall market

Faridpur, in South-western Bangladesh, is one of the poorest regions of the country and a priority area for Catalyst. Within Faridpur, in 2003, pond fish represented a logical focus for Catalyst for three main reasons.¹

First, the fisheries sector as a whole is of central importance to Bangladesh. It accounts for 6% of GDP and 6% of export earnings, 10% of the workforce are estimated to be employed in fisheries and, more widely, around 8 million households are thought to be involved in some aspect of the sector. Within fisheries, pond fish represents the largest sub-sector (see Box 1).

In 2003, Faridpur had around 42,000 businesses that were directly involved in pond fish cultivation: some 22,000 farmers, 9,000 retailers, 4,700 hawkers, 4,400 spawn traders, 800 nurseries and 1,100 suppliers and traders of various kinds. Intervening here offered Catalyst the potential to impact on an important part of the economy.

Second, since the 1990s, pond fish had been among the fastest growing sub-sectors in agriculture and further growth was predicted (Figure 1). While output from traditional capture sources had been declining by 1–2% per annum, pond fish production had grown at 15–20% per annum. By 2003, pond fish had become the biggest sub-sector within fisheries.

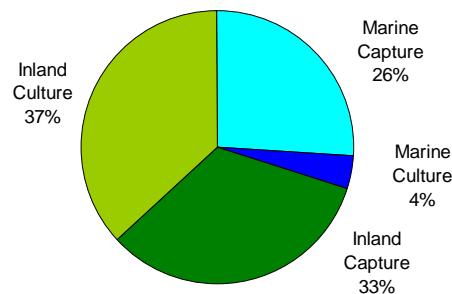
Underpinning these trends was consistently rising prices (of around 2.3% per annum in real terms) which in turn was a key reason for relatively high returns to producers. While initial investments in pond fish compared to alternative crops were considerable, profitability (returns on investment) was significantly higher (25% higher than in vegetables, 50% higher than in rice and double that of poultry).² Crops and vegetables were the main source of income in fish farmers' livelihood basket in 2000, but by 2003 they had been overtaken by pond fish.³

Box 1: Understanding the fisheries sector

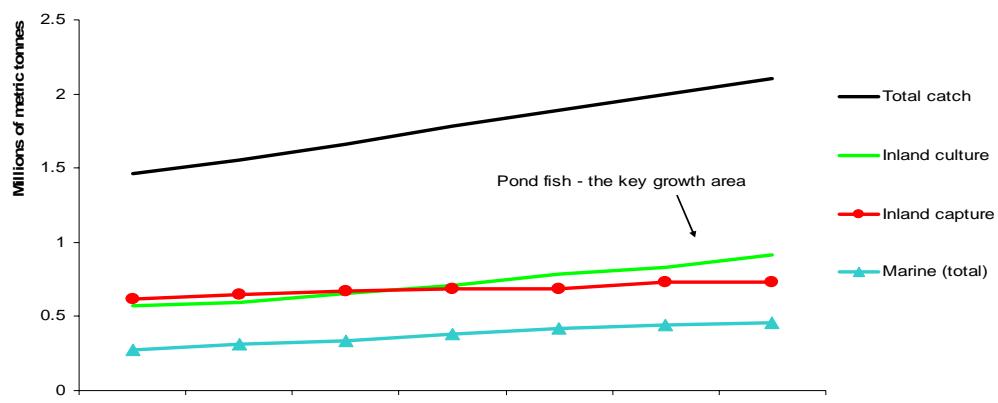
Fisheries in Bangladesh is a vast sector incorporating a huge diversity of activity. However, four main categories of fishery are identifiable, on the basis of location (coastal-inland) and production mode (capture/wild fish versus culture/farmed fish).

- *Marine capture*: mainly sea fishing, both traditional small-scale (artisanal) and large commercial trawling operations. This is declining by 1–2% per annum.
- *Marine culture*: primarily shrimp farming, much of it for export. This is growing by 3% per annum.
- *Inland capture*: fishing in lakes, rivers and flooded land and other open sources. This is also declining by 5% per annum.
- *Inland culture*: fish-farming, primarily for local consumption, is growing by 14% per annum. Within this category – also known as the pond fish sub-sector, carp is the most common fish produced (85% of total production).

Katalyst's interventions were focused on this last category (pond fish), which is most relevant to Faridpur (as an inland region) and where most opportunity for growth was to be found.

Distribution of annual total catch

Source: Department of Fisheries, Bangladesh 2006

Figure 1: Annual total and disaggregated catch, 1998-2004

Source: Department of Fisheries⁴

Third, for poor people in particular, the pond fish sub-sector was especially important and affected them in a variety of ways (see Box 2). Fisheries lie close to the heart of the Bangladeshi culture and economy, touching most households in rural areas in some way.⁵ Growth in pond fish for example, creates new employment opportunities such as in building

and repairing ponds and harvesting fish, as well as in supporting supply and transport activities, many of which are taken up by poor people. Moreover, the fact that a relatively high proportion of value-added stays at the fish farmer end of the value chain suggests that pond-fishing is an activity that directly impacts poor people's lives in a variety of ways. Katalyst's own survey data confirmed that the majority of people in the sector were below the poverty line. Also because of the pro-poor nature of the sector, more than 200 million USD had been invested by donors in pond fish, between 1986 and 2005.⁶ In 2003, there were two larger donor-funded projects in Faridpur that specifically targeted poor and female (potential) fish farmers (see Box 3).

Pond fish was also relevant to poor people as consumers. Fish is the main source of animal protein (60-80%) in Bangladesh but average consumption is considerably less than in comparable nations.⁷ As real prices continued to increase, there was concern that consumption among poorer groups would fall with a resulting deterioration in nutrition and health.

Box 2: Pond fish and the poor

How might the poor benefit from growth in the pond-fish sub-sector? At first sight, this is not obvious. Poorer people in rural areas traditionally rely on open water sources – as fishermen rather than fish farmers. This is a declining resource over which there is much competition and where the poor, often lose out. Pond fish farming is more relevant to those owning water resources, who are usually not the poor.

However benefits from increases in pond fish output are felt in other ways:

- Pond fish farming is relatively employment-intensive and increases in overall output can be expected to feed directly into a requirement for more labour.
- Small-scale producers (poorer people) who do have access to water resources appear to secure similar prices from wholesalers to larger producers and so their earnings per pond area are also similar.
- In carp production, the main pond fish, more than 50% of value added (i.e. wages plus profits) remains at the fish producer level, which is higher than for other fish. While this does show the relative lack of value-added activity in the value chain it also indicates that a high level of benefits remains in rural areas (see Annex Three).
- Finally, more fish production inevitably means that more, less marketable and smaller fish are given to extended family, neighbours and employees for their own consumption.

2.1 The overall problem: low output and productivity

In 2003, in many ways, the overall market for pond fish appeared to be in a healthy position. Production was growing at a robust 14% per annum to feed a growing local demand and continuing high prices were providing high returns for producers. Moreover, the characteristically high employment intensity of pond fish meant that benefits of this growth were, to some degree, spread to poorer people in the rural economy.

Yet, this seemingly healthy picture could not conceal underlying problems with the pond fish supply-side. Rising prices indicated that supply was still not matching growing demand and increasing imports (usually informal) suggested that the underlying competitiveness was under pressure.

More specifically, the performance of the pond fish sub-sector varied considerably throughout different regions of Bangladesh. Output and productivity were relatively high in regions that had received considerable investment from donors and government in research, extension and infrastructure (such as Mymensingh and Comilla in the centre and east of the country)

and in regions with a well-established tradition of pond fishing (such as Jessore, the region adjacent to Faridpur). This strong performance was not matched in others areas such as Faridpur. As Table 1 shows, Faridpur's productivity was 12% under the national average and more than 40% under that of the high performance areas. Moreover, many ponds were not being cultivated; the proportion of unused ponds was seven times that of Jessore.

Clearly, this patchy performance indicated that the good performance and practices of some areas had not transferred more widely. The potential of pond fish to contribute to the economy in Faridpur, to the economy nationally and to the lives of poor people was not being realised. In order to address this, production and productivity had to increase. Addressing this key development and competitiveness challenge was the priority for Catalyst's interventions.

Table 1: Comparative performance of Faridpur pond fish sub-sector

Area	Proportion of pond area unused (%)	Productivity (tones per hectare)
Faridpur	18.0	2.2
Bangladesh (national)	12.4	2.5
Jessore (neighbouring district)	2.7	3.6
Comilla (major investment)	6.6	3.4
Mymensingh (major investment)	5.6	3.1

Source: Fishery Statistical Yearbook, 2004-05, DOF

3. Market performance: the underlying causes

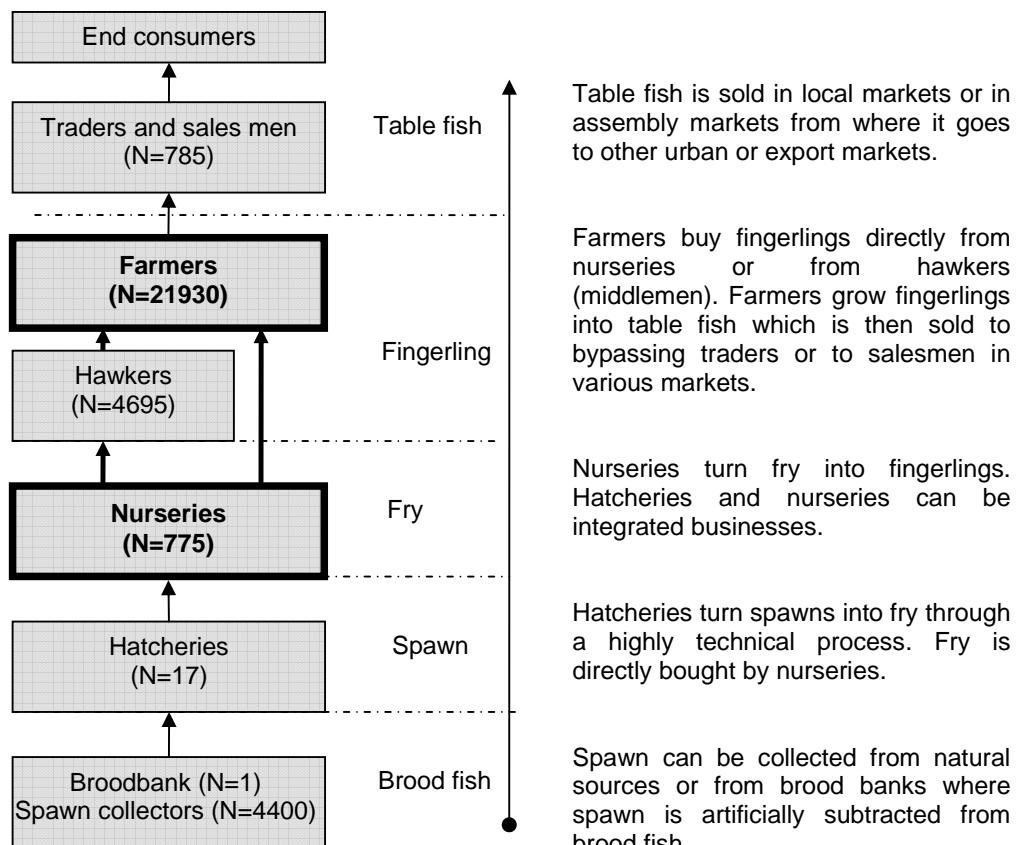
In order to address the challenges of production and productivity in Faridpur, Katalyst needed to answer two key questions:

1. What were the constraints that prevented appropriate solutions from emerging through the market system?
2. What could be done by Katalyst to address these?

The first question focused on the causes at the root of the problems affecting farmers. Why, given the obvious growth and profitability of pond fish, were farmers not cultivating their ponds? Why were market players not in a position to offer solutions to the industry's problems? What were the immediate and – more important – the underlying causes of the restricted output and productivity? The second question was concerned with matching Katalyst's capacity and potential with the emerging picture of a weak market.

Katalyst, following a market development approach (Annex One), undertook a number of detailed market studies and developed a detailed picture of the sector including the main players, the number of businesses involved and the major processes in the value chain (Figure 2). With this broad picture in mind, Katalyst's focus was on the business services (formal and informal) that could enhance output and productivity.

Figure 2: The pond fish sector in Faridpur



3.1 Immediate causes: traditional cultivation practices and lack of quality inputs

Many of the constraints experienced by pond fish in Faridpur were mired in the multiple, generic problems of rural Bangladesh. The poor quality of the physical infrastructure led directly to high losses, given the perishable character of fish. Population pressure and land

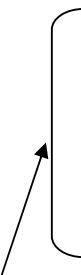
segmentation restricted the size of ponds and put additional stress on soil and water quality. Financial services were often unsuitable for such a seasonal activity as pond fish farming.

These wider problems lay outside the mandate of Catalyst but, beyond these were a range of 'pond fish-specific' issues manifested in poor practices and poor input quality. Catalyst identified four specific problem areas that became the focus of interventions (Table 2 outlines these in brief and more details about all interventions are given in Annex Two). Two of these interventions are the focus of this case, fingerlings and pond fish cultivation practices, both with issues which were rooted in weak knowledge and information.

Poor availability of good quality fingerlings. Fingerlings, the second largest production cost (between 20% and 30% of total costs), are in many ways the most important input to pond fish production. Nonetheless, up to 70% of the farmers were dissatisfied with the quality of fingerlings available. Typically, these were undersized, weak and prone to diseases. Although an increasing amount came from neighbouring Jessore (where quality appeared to be higher), the majority (65-75%) were sourced from local nurseries. Damage and losses during transportation was an additional problem. Hawkers, who delivered 70% of all fingerlings, usually used bad transportation practices, over-packing fingerlings into baskets and experiencing high mortality rates (exceeding 50%). Farmers knew about the benefits of good fingerlings but these were often unavailable in the local market.

Traditional (poor) cultivation practices. A comparison between farmers in Faridpur and Jessore showed that traditional, out-of-date practices predominated in Faridpur. An estimated 70% of all farmers knew little or nothing about appropriate cultivation methods. Practically all farmers used low quality feed, the single largest production cost (up to 50% of costs), did not apply fertilizers and were ignorant of key cultivation issues such as adequate pond preparation or ideal fish density. This was manifested in high rates of wastage (45% versus 22% in Jessore) and high mortality rates (20%).⁸ Overall, the market system in Faridpur appeared relatively slow in learning from practices elsewhere in the country. Better cultivation practices clearly meant a smarter usage of high-cost inputs such as feed, fertiliser and medicine. In comparison with these inputs, labour costs (typically around 15% of total costs) are relatively modest.

Table 2: Key issues in the pond fish sub-sector



Specific issue	Immediate cause	Knowledge and information basis
1. Limited quantity of brood fish and spawns	No private supply of cultivated brood. Only 10% of supply comes from sources outside hatcheries – one public brood bank and spawn traders (natural sources).	Lack of private sector investment in brood banks because of lack of 'how to' capacity, understanding of potential benefits and weak links with relevant knowledge sources.
2. Absence of specialised inputs	Retailers were not stocking/selling specialised inputs for pond cultivation.	Lack of knowledge of the potential demand and opportunities of this new market.
3. Poor quality fingerlings	Nurseries did not produce fingerlings of appropriate quality.	Nurseries' lack of awareness of farmers' needs and requirements and knowledge of how to improve quality.
4. Poor pond cultivation techniques	Farmers had generally stayed with traditional cultivation techniques.	Farmers' main sources of information was local nurseries who themselves had weak capacity of good practices.

Focus of
case

3.2 The underlying systemic causes: weak market linkages

The reason for the problems of poor quality supply of fingerlings and inefficient practices in Faridpur appeared to be underlying in their knowledge and information base. However, why was this so? Why did existing market players not access the information they needed? Certainly, fish farmers appeared to want to change. Closer trade relations with the neighbouring and more go-ahead market in Jessore had raised awareness about production standards and cultivation practices. Farmers were aware that others were doing better.

Further analysis by Catalyst suggested that the answer to Faridpur's knowledge and information problem lay with weak linkages between different market players.

Quality fingerlings: the key players and constraints

Farmers purchased their fingerlings from nurseries and hawkers.

Nurseries were often fish farmers who had moved additionally into fingerling production. Around 800 in number, they were spread throughout the region and regarded by fish farmers as a respected source of information. Although nurseries maintained trade relationships with Jessore, buying inputs that were not available in Faridpur, their main information source was local hatcheries where they bought their fry (see Figure 2).⁹ In general, nurseries' performance in Faridpur was inferior to that of Jessore, manifested for example in higher mortality. Strikingly, nurseries in Faridpur did not really regard themselves as being in competition with each other.

Nurseries' direct links with farmers were usually through fingerling traders: *hawkers*. This was a diverse and numerous groups (almost 5,000) of relatively low-income people, operating on a seasonal basis, who bought from nurseries and sold to farmers, typically farmers further away from nurseries. Fingerlings were transported in large vase-like pots by public transport and bicycles. Hawkers tended to work together in informal groupings, negotiating and agreeing prices and, within the group, did not compete with each other. Substantially unaware of standards or quality issues, they saw their role as being confined to price negotiation and transportation.

As much as 70% of fingerlings supplied to farmers came through the hawker route with the remainder coming directly from nurseries. Unlike other areas (e.g. Jessore), Faridpur did not have a physical market where fingerlings could be stored, bought and sold and, more importantly, where new contacts could be developed and information exchanged. In the absence of this, relationships between nurseries, hawkers and farmers were relatively static.

Overall, the picture which emerged was one of:

- Relatively fixed, traditional and closed trading relationships between the key players engaged in fingerling supply;
- Very restricted competition – actual or perceived – between nurseries and between hawkers; and
- Very limited flows of information to farmers and little priority attached to knowledge and information.

Cultivation practices: the key players and constraints

Survey data showed that farmers had six key sources of knowledge and information on pond fish cultivation techniques: nurseries (and other farmers), hawkers, business, the DoF, the YDD, associations and NGOs.

Nurseries were seen by farmers to be the most useful source of information by far. Usually local, accessible and with good social standing, nurseries were regarded as significant, knowledgeable players who were also engaged in pond fish farming. Of farmers, 80% said that they regarded nurseries as their main source of information. Yet, this popularity was not matched by the quality and value of the advice offered – fish farming practices remained traditional and unproductive.

Hawkers, despite having regular contact and close relationships with farmers (at appropriate points in the season) were not really regarded by farmers as credible sources of information. Hawkers were often of relatively low social status but, more importantly, saw their own role in a narrow light as traders and transporters. If they had insights into fish cultivation (for example through their contacts with nurseries) they certainly did not see it as their role to pass this on to their purchasing farmers.

The DoF, on paper at least, had a significant role to play in relation to knowledge and information. The DoF was a recognised key source of knowledge and expertise through its hatcheries, nursery ponds, research organisations such as the BFRI in the north of the country, and links with other research bodies. Yet, how DoF's expertise and 'best practices' reached farmers, was less clear. The main extension route was largely irrelevant, even after many years of donor support. Only 9% of those trained by DoF in the Fourth Fisheries project (Box 3) fell below the poverty line.¹⁰ There were fifteen extension workers for Faridpur as a whole and in practice only a very small proportion of the region's farmers (those wealthier and better connected) could rely on them as an information source. The majority of farmers, particularly the poorer less well-connected ones, had few if any direct contacts with DoF or other specialised research organisations.

Box 3: Emerging lessons for knowledge transfer in the Faridpur pond fish sector

Two large aquaculture projects had been active in Faridpur but were moving into their final phase by 2003: (1) an IFAD-funded project that reached 15,000 women in the Southwest, organised them in fishing groups with credit and training inputs provided by NGOs, and (2) the Fourth Fisheries Project, funded by the World Bank and DFID among others, which had trained 200,000 farmers (25% women) nation-wide.

The IFAD project, identified by IFAD as 'a problem project' in 2000, mainly provided credit to women groups for pond lease along with a training package on cultivation techniques. Although the results from training had been satisfactory, IFAD recognised that it had been difficult to replicate and scale-up: "*Informal dissemination of improved aquaculture technologies seem limited. Although more ponds are being cultivated, it seems that detailed technical messages are not easily disseminated between pond operators.*"

The Agriculture Extension and Training component of the Fourth Fisheries Project also acknowledged that the impact of its training programs had been limited. Impact studies showed that average adoption rates of taught technologies were far below target (14% against a target of 40%) and even lower among poor farmers. One explanation was that it had overestimated the capacity of DoF. Another was its poor understanding of how knowledge was actually being transferred. Looking for improvements, it concluded that: "...*training approaches need to be improved, and possibly that the amount of training contact time needs to be increased.*"

The experience of both projects confirmed that farmers' productivity could be raised by addressing cultivation techniques but the scale of impact was lower than expected. And, of greatest concern, the sustainability of change was open to serious question. Given that externally-provided training of farmers was the main impetus for change, now that external resources were finished, how would this be provided in the future? Katalyst recognised that its approach had to address this sustainability weakness.

The YDD played a more niche role in the Faridpur pond fish sub-sector. It offered training to the young (18-35 years) and unemployed, along with credit, to encourage them to start-up in the fish farm business. Around 200 people per annum were trained but, since the content was directed at the unemployed, information had an introductory and generic character and was not particularly relevant (nor accessible) to most farmers.

Although a number of fisheries associations were in existence in Faridpur, they were not widely known and often more recognisable through their leaders than the organisations per say. With limited membership among farmers and nurseries, none of the associations were seen as being especially active or relevant for new knowledge and information. Their role as advisor or bridge between the expertise that lay within research organisations and the private sector was negligible.

NGOs had been notably active in Faridpur in the past with varying types of intervention. In general, they tended to offer direct 'support' – training, advice and finance – to farmers, especially to those from priority groups (e.g. the poor and women). However, their continued

role as sustainable sources of knowledge and information was dependent on donor funding which, following previous high volumes, had reduced (see Box 3).

Overall, three general characteristics stood out in the picture above:

- Nurseries were clearly the main source of information to fish farmers but there were doubts about the quality and intensity of the information that they offered.
- While government as a whole was a considerable source of expertise, this was generally not reaching fish farmers, with the DoF extension service being of very limited relevance.
- Associations were generally inactive and the role of advocate and bridge to government was not being played effectively.

Analysis of the underlying constraints impinging on the sector showed that the challenge to be faced by Katalyst was how to move a traditional (if growing) activity into a new and more productive mode that would offer greater benefits for all its key actors. Historically, most people involved in fisheries belonged to fishing castes and fishing was a rather low-income activity with little emphasis on new technology or the application of new knowledge. Relationships between different actors were based on physical proximity, social structures and kinship rather than on choice and quality. Clearly, for pond fish to further develop and the problem of fingerling supply and inefficient cultivation practices to be addressed, relationships and linkages had to be enhanced to allow more knowledge and information flows throughout the sector. In practice, in pursuit of this goal, Katalyst's analysis saw the most practical immediate focus for its work to be on building nurseries' ability to provide useful information to farmers and enhancing the capacities of associations to strengthen information flows through the value chain and, in particular, to develop a sizeable fingerling market place in Faridpur.

4. Acting to build the market: intervention design and implementation

Given the above analysis, the challenge facing Katalyst was to decide what to do: what actions could it take to address these constraints characterising pond fish in Faridpur and so influence growth throughout the sector? In considering how to face this challenge it was guided by three principles:

- An overall vision of how the market could work better in the future, one where knowledge and information flowed more easily between different market players and where there was improved availability and use of inputs and services.
- A focus on capacity building of different players that were seen to have an important continuing role within the future picture of the sector. Actions aimed to develop the motivations and know-how capacities of key players.
- Recognition of the need to act in a flexible and entrepreneurial manner whilst being consistent with the overall vision and with the incentives of key players.

Katalyst's designed and implemented activities in conjunction with IDE. With experience in business services and presence in Faridpur, IDE was a suitable partner to take responsibility for day-to-day tasks with Katalyst providing guidance and oversight from Dhaka.¹¹ Over a two year intervention period (roughly from August 2003 to August 2005), Katalyst and IDE implemented a number of interventions, three of which are the focus here:¹²

1. Facilitation of a fingerling market: developing a large-scale physical market for fingerlings was believed to be central to improved competition, input supply and information throughout the sector. This intervention provided technical assistance (a feasibility study and management input for construction) to the Faridpur Fisheries Association (FFA) as it sought to lobby for and to develop this major new facility.
2. Capacity-building of associations: Katalyst's analysis indicated that many of the weak linkages characterising the pond fish sector could only be addressed through stronger, more effective associations. This intervention provided technical assistance, starting with a vision workshop and followed by one-to-one advice, to build organisational capacity of the associations in order to play more effective roles.
3. Facilitation of a nursery training: improving fish farm practices on a sustainable basis required that the quality of information from their main information source – nurseries – improved. This intervention supported the delivery of a three-day training programme for nursery-owners in how to offer better information and advice to fish farmers.

Although these interventions varied in focus and content, they shared a number of distinctive characteristics.

4.1 Identification of key partners

The nature of the pond fish sector made finding a local entry point into the sector a priority. With a number of different stages of value-added, with many different players and multiple constraints rather than one or two critical blockages, it was a relatively complex situation. Deciding on where to begin and with what was not straightforward. In this context, a partner – an actor in the pond fish 'system' – was necessary to help prioritise actions and to provide an opportunity to work at different places throughout the value chain. Partners had to both embody and be a key driver of change.

From the outset, even during its initial research, Katalyst had been building relationships with various actors: with sector specialists, government officials, NGOs as well as individual businesses. It soon understood that a number of lead farmers were heading a fisheries FFA. FFA represented a new emerging attitude in pond fish cultivation that emphasised the potential benefits of working together for the sector as a whole. Moreover, it appeared to be

an eager partner. For Katalyst, compared with other potential partners, working with an association such as FFA had several advantages:

- *Valid role*: many of the prioritised linkage constraints – for example poor information from government research organisations or weak market infrastructure – appeared unlikely to be addressed without the active involvement of an association. The experience in neighbouring (and successful) Jessore was that associations certainly had a critical role to play.
- *Positive image*: leading members of FFA enjoyed respect and a positive reputation among many farmers throughout Faridpur. They were seen to be knowledgeable and had the potential to exert influence.
- *Sector-wide interest*: FFA had members from all the main interest groups within the sector (hatcheries, nurseries and a few farmers). Compared with other associations, it was thus in a position to represent both specific and shared interests.
- *More valid than alternatives*: these positive features of FFA stood in marked contrast to other potential partners. NGOs had been a favoured donor partner for many years but their services tended to last only as long as the donor funds that supplied them. NGOs could not be seen as valid players within the market. In the case of government (the DoF), their own extension work had an extremely limited outreach and its overall relevance was limited. Compared with these alternatives FFA represented a more legitimate choice.

Importantly, Katalyst did not start from the premise that an association must be its main partner. Katalyst was cognisant of two facts; that many sectors work perfectly adequately without a strong association; and that the wider experience of development agencies and associations was mixed (Box 4). Nevertheless, in this instance, FFA had a valid and essential role to play and there was a clear logic to place them at the centre of interventions.

Box 4: Donors and business membership organizations (BMOs)

At first sight, BMOs (or associations) seem a logical partner for development agencies. Created for and by entrepreneurs they are indigenous organisations representing private (sectoral) initiative. Moreover, with their business orientation and skills, they would surely have the capacity to understand and act to bring about lasting development.

In reality, agencies' global experience has been more mixed and certainly has not fulfilled the great expectations once raised. Two things have gone wrong. First, BMOs as it turned out – are not so dissimilar from any other civil society organisation, being characterised by vested and narrow interests, contradicting objectives (often political and social), and weak organisational capacities.

Second, support from donors has often 'over-loaded' BMOs – luring them into service-providing functions that are beyond their interest or capacity and turning them into quasi-NGOs, dependent on external funds, and undermining the self-reliance that was one of their distinctive features. Donors have also been guilty of transplanting the experience of formal, public law status BMOs in high-income countries on to the very different context of low-income economies where BMOs have a voluntary status.

From the above experiences the emerging, widespread view on BMOs recognises (1) their potential importance, but realizes (2) that their core roles are likely to be limited and based around advocacy, information and networking.

4.2 Sequencing interventions according to market dynamics

Katalyst approached the pond fish sector armed with a thorough understanding of the sector, the challenges it faced and incipient relationships with key players. What it did not have was a fixed blueprint of precisely-defined interventions. How then did it decide what to do, and in what order? Its approach here was to let the pace and order of interventions be guided by the dynamics of the sector itself.

The first intervention, the facilitation of a fingerling market (October 2003), emerged because it was at the top of market players' agenda. The idea of a fingerling market in Faridpur – a physical market with many small ponds from where nurseries could sell their fingerlings to farmers and hawkers – had been a point of discussion for some time (there were six fingerling markets throughout Bangladesh). Compared with conventional direct fingerling supply from nurseries/hawkers, a market could offer better quality, more variety and lower prices. Indeed, for these reasons, an increasing number of hawkers were already sourcing fingerlings from the fingerling market in Jessore, the biggest in the country. FFA believed that a market would improve the business environment in Faridpur and wanted to construct one. However, this was a sizeable undertaking that required careful planning and significant investments in leasing land, earthwork, drainage and office space (approximately 20,000 USD in total), and FFA lacked the confidence and networks to pursue this idea.

Katalyst, from their initial market research, saw how this could build towards their future vision. A market would not only improve the availability of fingerlings but create a place where farmers, nurseries and hawkers would meet, interact and negotiate. It would provide a basis for improved exchange of information embedded within market relationships. Moreover, compared with more traditional information-focused alternatives (training, information sheets, linkage meetings etc), a fingerling market offered the prospect of addressing information constraints on a sustainable basis. One of Katalyst's key objectives, after all, was to develop better information-based relationships.

After one year of work in 2004, Katalyst considered the partnership with FFA to be broadly successful. FFA had lobbied with the government to release land and the process of planning and construction had begun. It had become clear to Katalyst (and to FFA) that, in order for FFA to play a greater role, its organisational capacity – to develop, organise and deliver – needed to be enhanced. Katalyst had also become aware that FFA's focus was primarily in one district, and that other (weaker) associations were active elsewhere in Faridpur. These realisations brought Katalyst to its second set of interventions. It first agreed on capacity-building measures with FFA and then started negotiations with three other associations. Two of these, although young and inexperienced, had sufficient commitment to warrant Katalyst's involvement. Capacity-building workshops took place in late 2004 and 2005.

The first two interventions had emphasised the importance of good information and of associations, and the third intervention (mid-2005) built on that foundation. Farmers' cultivation techniques were unproductive, practice had to change and for that to happen, knowledge had to increase. Katalyst realised that (a) such information had to come from nurseries, being farmers' most trusted information source, and (b) that associations potentially had an important role to play in addressing this issue. In consultation with the associations, Katalyst designed a training module for nurseries on appropriate fish cultivation techniques and on how to pass that information on to farmers. The training was delivered by a specialist organisation but organised under the banner of the three associations.

Overall, the sequence and flow of Katalyst's interventions clearly emerged from its interaction with market players. Interventions not only had to address the key constraints of the sector as prioritised by Katalyst but had also to match the capacities, incentives and priorities of its partners. The same combination of interventions would not have been undertaken had Katalyst worked with different partners.

4.3 Strengthening market-based relationships

At the heart of weak linkages in the pond fish sector laid poor relationships between the various actors in the sector. Katalyst's aim was to strengthen these market-based relationships and its intervention process sought to do this in different ways.

In the case of the fingerling market, Katalyst helped FFA to strengthen and build new relationships. It financed the feasibility study which FFA then disseminated among its members and key stakeholders such as NGOs, local government, and investors. This created a momentum and with further assistance from Katalyst, FFA became registered officially and expanded its presence. It formed a market committee for its daily management, lobbied successfully with government for land, made the necessary investments and even managed

to attract commercial sponsors. Katalyst was careful to maintain a facilitative role, inviting FFA to take a strong lead in its activities. In December 2005, the market was inaugurated in the presence of many stakeholders, both familiar and new, with whom FFA had been collaborating throughout the construction process.

The essence of the capacity-building workshops conducted with associations was on how to strengthen relationships between members and management and among members with different types of businesses. Moreover, the workshops provided an opportunity to inform associations about other associations.

The nursery training was aimed at enhancing nursery-farmer relationships. Ideally, this would have been conducted by an input supplier with a commercial incentive to increase sales from nurseries to farmers.¹³ However, none of the businesses approached met the requirements of being relevant to fisheries, with (potential) capacity to deliver training in Faridpur and a willingness to explore this fragile market. The second-best option was a well-established NGO, knowledgeable about pond fish and competent in training but whose future role was dependent on uncertain (non-market) donor funds.¹⁴ This option was chosen but the opportunity to bring training into the pond fish market system was not pursued.

Still, because it was organised by associations, the training provided the means to enrich association-nursery relationships. Katalyst started by playing a prominent role here – selecting the initial list of participants – but the associations found this out-dated and limited and took over the process. It added presentations from YDD and DoF to the training, managed all logistics and collected the fees. It was the first time that the associations had charged a fee for a learning event.

Box 5: The Faridpur Fisheries Association

In July 2002, the ‘Faridpur District Fish Farmers, Fingerlings Traders and Hatchery Owners Welfare Association’ deposed its management committee. A group of members had been highly frustrated with the passive attitude of the association towards sector problems, such as growing fish robbery, and called for action. A new committee was chosen.

The committee selected comprised of fifteen members but in reality it is driven by a few individuals. One of them is the President, Mr Lipon. He is an energetic, educated young man from a politically well-connected family. Whilst he was unemployed, the YDD got him interested in fish cultivation and he has grown his pond business impressively ever since. Mr. Mohsin, the Secretary, is another key person who is also politically well-connected. He started to cultivate fish in 2001 after returning from some time abroad. Like Mr Lipon, he is very entrepreneurial and now earns a good living from his ponds. Another example of an important person is a young family friend of Mr Lipon: one of the eleven female members. She is one of the few women to own a pond and the only female present at all meetings. The committee meets monthly in their small office. Elections are held every two years but the same committee is still in power.

With the new committee, membership has grown rapidly from 40 to 166, among which are hatcheries, nurseries, farmers, hawkers and even some retailers. Although fees are charged, only half of the members actually pay. Voluntary donations are the main source of finance for the FFA and are collected when particular needs arise, such as the creation of the fingerling market. The FFA’s more regular tasks are organising learning events around specific topics, and managing an input shop that buys in bulk and sells at competitive prices. Another important role of the FFA is maintaining good relationships with different government bodies, research organisations and NGOs, and lobbying on a wide variety of issues such as credit, insurance, and licensing. The FFA aspires to include all Faridpur farmers one day and, ultimately, establish a national pond fish federation.

Katalyst therefore strengthened commercial relationships by (a) continuously focusing on the incentives and motivations that underpinned relationships and (b) giving a central role to the associations in the planning and execution of activities, encouraging them to play a wider

coordination role and providing a permanent platform for communication and negotiation between market players.

4.4 Improving ‘standards’

A specific goal of enhanced relationships was improving standards. Formal standards – written, defined, certified – were not immediately relevant for most players save for those few engaged in exports. However, standards in the wider sense in terms of product quality and process efficiency were issues that permeated the sector. Katalyst’s interventions sought to upgrade standards in a number of ways.

In the fingerling market, by bringing in technical expertise to design and support the construction of the market, Katalyst aimed to raise the standard of the overall physical infrastructure. A key purpose of the market was also to promote higher standards by opening up nurseries to more competition and buyer pressure. In capacity-building, in emphasising associations’ wider co-ordinating role, Katalyst highlighted Faridpur’s lower standards of performance relative to other regions and encouraged associations to use this as a motivational and learning point.

In nursery training, the programme was concerned with new and better standards of practice, including information on a wide set of pond cultivation techniques, transportation practices, business management and marketing, and crosscutting gender and environment issues. Most innovative was the message that providing a better standard of information to clients (farmers and hawkers) helped to increase their clients’ productivity and therefore nurseries’ own sales. There was, therefore, obvious self-interest in providing good information.

4.5 Building ownership among market players

From the outset, Katalyst emphasised to potential partners that its interventions were concerned primarily with technical assistance (rather than money or capital items) and that its role was to work with partners to develop interventions – not to offer instant ‘solutions.’ Its purpose was to build ownership and, as a result, enhance the potential for sustainable outcomes.

In reality, putting these principles into practice resulted in intervention activities that differed from the development norm – seen most clearly in the fingerling market. Here, the initial request from FFA was for Katalyst to fund construction. This was rejected by Katalyst as it realised that the process of how the market was conceived, developed, constructed and operated, was critical in determining its overall usefulness and that FFA had to take full ownership over this process. Katalyst’s counter proposal of funding a feasibility study was initially rejected by FFA who saw it as unnecessary (later they changed opinion). However, this study actually introduced information that could be easily disseminated and offered the basis to: build relationships with others (government, other associations, potential members), lease land (from government), finance construction (from members and donations) and develop operating structures for the market. This process took time – two years from first discussions to market opening. Nonetheless, the final outcome was clearly owned by FFA rather than an external agent such as Katalyst.

Similarly, applying the ownership principle to working with associations required that Katalyst acknowledged the uniqueness of associations’ leadership and dynamics: one association strongly focused on expansion, another was more political and tried to unite different interests, and the third’s priority was on innovation and technology. Organisational strengthening could only be meaningful by recognising these differences.

Katalyst’s approach therefore emphasised: (a) ownership consistent with capacity with partners taking a leading role and bearing at least some of the costs, at every stage; and (b) longer-term sustainable outcomes rather than immediate results, especially by building on the incentives of the various actors.

4.6 Outputs achieved

The direct investments (person days and material costs) made by Katalyst, partner NGOs and associations (principally the FFA) and the outputs achieved are shown in Table 3. This does not show Katalyst's indirect costs related to the interventions, such as initial sector studies, nor does it show other activities that the association undertook at the time that, indirectly, might have supported these interventions.

A number of outputs were achieved. The FFA took full responsibility for the actual construction of the market. A total of 110 association members in three batches, one training for each association, were trained. And the nursery training programme reached 400 nurseries – half of the Faridpur nursery population – from five different districts, in sixteen batches. This three day training course was delivered over a time-span of five months which, given that this was the first time that the associations had organised a district-wide training programme jointly, exceeded Katalyst's initial expectations. Together these outputs, it was hoped, would provide a basis for impact.

The total 'development cost' of Katalyst and partner NGOs is estimated at 63,000 USD.¹⁵ Around 30% of this is attributable to development of staff time and this would have been higher but for the relatively more resource intensive nursery training. The figures show that the nature of facilitation tends to be people-based and time-intensive. In this case, the pivotal role of the associations throughout all interventions was demonstrated by their own time commitment.

Table 3: Key costs* and outputs per intervention

Intervention	Activity	Development agency costs		Market player costs	Direct outputs
		Katalyst	Other NGOs	FFA	
Fingerling market	Feasibility study, meetings, promotional material and technical assistance	89 days 14,142 USD	94 days	157 days 383 USD	Agreement to invest in building the fingerling markets
Capacity building associations	3 vision workshops	36 days 571 USD	18 days 647 USD	72 days	110 members trained
Nursery training	Curriculum development and delivery	20 days 18,645 USD	60 days 6,215 USD	30 days 182 USD	400 nurseries trained
Total		135 days 33,358 USD	172 days 6,862 USD	259 days 565 USD	

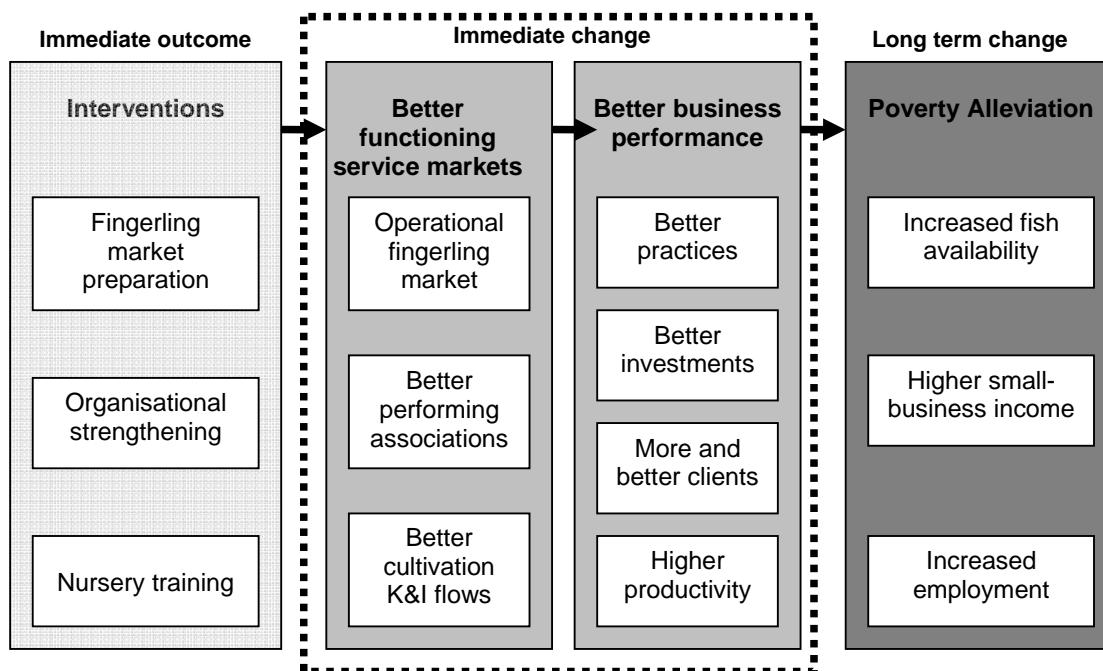
* Katalyst costs are estimates to cover programme preparation, design, monitoring and administration but excluding market research and impact assessment. NGO costs are those defined in their contracts. Association costs are retrospective estimates and exclude regular association activities. An exchange rate of 1USD=65 BDT has been used.

5. Developing the market: changes from interventions

Katalyst's logic model (Figure 3) holds that poverty is reduced by improving service provision throughout the pond fish sector. Interventions aimed to influence sector performance by bringing about changes in the environment directly around businesses – the fingerling market, the fisheries associations, and the knowledge and information flows related to pond cultivation techniques – so that business performance could improve and finally, poverty reducing change be achieved.

In March 2007, roughly three years after the first intervention had started, a random stratified survey was held among approximately 600 respondents from the main group in the sector: nurseries, micro-farmers, small-sized farmers, medium-sized farmers and hawkers. Half of them had their business in the regional centre of Faridpur and the other half in the remote southern district of Kotalipara, near Jessore. Half of them were directly influenced by Catalyst's interventions and the other half, acting as a control group, were not. The questionnaire collected data from the past three years' experience (see Annex Three for a description of the survey methodology). This survey, and interviews with key informants, threw light on the nature of change, especially immediate change in the market system (service markets and businesses), and the extent to which this was caused by Catalyst.

Figure 3: Catalyst logic model



5.1 Wider context

The impact of Catalyst needs to be placed in the wider, national context of a buoyant sector. Catalyst has not been the only factor impinging on the pond fish sector in Faridpur. High domestic growth (10-15% per annum) in pond fish output was maintained during the period, with growing demand, especially for lower-value species. Formal import levels remained negligible, although informal imports from India of higher-value species in Dhaka and other urban markets were known to have increased considerably.

This domestic growth has been a result of expansion and improved productivity. Expansion happened by bringing unused ponds under cultivation. Overall productivity increased by 11% annually between 2000 and 2005. A considerable part of this growth was due to a number of large investments in fisheries by DoF and particularly by donors (see Section Two). For example, in the period between 2000 and 2005, a USAID funded project (\$ 5.5 million) reached almost 70,000 pond fish farmers in 68 districts (excluding Faridpur) with continuous training and extension support. It registered an increase in productivity levels of 23% annually.¹⁶

The impact of Catalyst's interventions therefore needs to be seen within this wider picture of continuous growth, rising consumer prices and targeted development projects. In this context, what specific changes can be attributed to Catalyst?

5.2 Operational fingerling market

The fingerling market was a key focus of Katalyst, at least initially. It was expected to bring demand and supply together, raise competition, stimulate information exchange, improve the availability of affordable, good quality fingerlings and strengthen the association in the process.

After effective lobbying to reverse a negative decision, FFA successfully leased government land and constructed the market. FFA spent roughly 16,000 USD on the construction task, more than Katalyst's initial input in feasibility studies and other preparatory work. One-third of this was financed by three prominent management committee members (approximately 1,800 USD each), one-third came from a group of 30 members (donating different amounts from 80 USD up to 770 USD each), one-fifth was contributed in-kind by a pipe company, and the remainder came from various donations from outside FFA. Many and diverse people were involved during the construction process but, eventually, once completed, seventeen nurseries rented the 27 newly-constructed ponds.

The market showed promise in the first year. From the start, it was visited by large numbers of hawkers and rapidly attracted an increasing number of farmers. However, despite its initial success, drainage problems became apparent and eventually prevented the market from operating the following season (2006). Indeed, FFA misjudged the seriousness of these problems and (perhaps waiting for Katalyst to act) failed to decide on a proper solution that would reanimate members' enthusiasm and willingness to invest. In 2007 the market remained closed and it was uncertain whether and when the market would operate again. Hence it is unclear on how it has influenced the availability of fingerlings, the association, its members and the wider sector.

5.3 Better performing associations

Katalyst's approach to the pond fish sector was primarily to work with and through business associations. Change in associations was envisaged at three levels: the associations' organisational capacity and efficiency, the services provided and members' level of satisfaction. Despite the setbacks of the fingerling market, a number of changes have been realised in FFA and to a lesser extent in the other two associations.

Organisational level

- Administrative practices have improved. All associations defined a constitution, are officially registered and agreed on targets during the workshops. Indeed, FFA is planning to hire a paid employee to deal with administration, a task previously done by a family friend of the President.
- All three associations have seen a rapid rise in membership over the past three years. Two associations have doubled their membership and some members – with tarnished business reputations – have been expelled in order to preserve the good name of the association. Also membership has broadened slightly to represent the stratification of the sector: associations, originally set up by and composed of larger hatcheries and nurseries, now include farmers and even some hawkers.
- Inter-association discussions are emerging. Beginning with the nursery training, where FFA assumed a leading role and pro-actively engaged with other associations, relationships have developed.

Services

- Events and training are organised more frequently and around more varied issues. One association increased its thematic meetings from two to four times a year, drawing on expertise from its members but also from DoF and YDD, and has seen a rise in participation (to around 40 people per event). Training events cover more diverse subjects: for example, fingerling release (for hawkers), insurance schemes and preparations for another fingerling market.

- Increasing awareness of the need to charge for services which, typically, have been offered free of charge in accordance with the prevailing practice.
- Stronger lobbying activities. This is most noticeable with FFA which, with its established political connections (up to ministerial level), has sought increasingly to influence national and local fishery policies. FFA has developed a relationship with a micro-credit provider whereby it acts as a guarantor for individual members and negotiations are in the early stages to implement a license system for hawkers. All three associations have also negotiated a 'discount' for their farmer members with the traders in the market who, with considerable market power, typically offer 'tight' prices, often felt to be unfair by individual farmers. The associations, represented by the larger businesses, have managed to agree on a better price arrangement.

Member satisfaction

- Increasing awareness of associations. Many nurseries and farmers know at least one of the associations and most have come to know about them only after 2004. The fingerling market, having been a popular topic of conversation for some time, made FFA very visible and obviously spurred awareness. Although few hawkers knew of the associations, over two-third knew about the fingerling market.
- Member satisfaction is at a high level and has grown slightly:¹⁷
 - Two-fifths of nurseries are members and 70% became so after 2004. Practically all saw themselves as active members, attending most meetings, and almost three-quarters said they had encouraged others to become members.
 - Associations are seen to be responsive to members' business problems. Half of the nurseries considered information on pond management and breeding techniques the most valuable benefit from membership. Others mentioned access to cheaper and better inputs (24%), sharing problems and getting specific advice (11%) and information on disease treatment (9%) as the most important service. Members seem increasingly satisfied with the services.
 - Members are satisfied with associations' management. Activities have been increasing with 76% of members having a more intense relationship with the association than a year earlier.

5.4 Improved knowledge and information flows

Katalyst's interventions aimed to stimulate better information exchange between businesses. The survey indicates that information exchange between trained nurseries, farmers and hawkers has improved over the past three years, and to a significantly larger extent than seen in the control group.

Trained nurseries are increasingly aware of the importance of knowledge and information, of farmers' needs and of the benefits, better information brings to their own business:

- 93% said that it was important to provide farmers with information on cultivation practices and 82% thought so for hawkers (compared to 84% and 65% in control group).
- Trained nurseries dedicate significantly more time to information gathering and repeatedly referred to associations as the most important information source for different aspects of their business.

Farmers confirm this improved information flow from trained nurseries: 80% received more information from them than two years ago. When asked where they had learned about the different aspects of cultivation (pond preparation, stock management, release of fingerling and use of feed and medicine), in the main, they cited trained nurseries. The contrast with farmers in the control group is clear. For example: 64% of farmers that bought from trained nurseries had learned from them how to recognise and remove unwanted fish (compared to 48% in the control group).

Hawkers too confirmed that information exchange had improved. The majority of those who bought from trained nurseries mentioned them to be vital for new knowledge. For example: 78% had learned about fingerling release from trained nurseries (32% in the control group).

Hawkers had learned from the trained nurseries not only about the importance of *getting* more information but about *giving* more information to farmers: 95% stated that providing cultivation-related information to farmers was important (19% in control group) and 97% that farmers are increasingly asking for information (against 36%).

5.5 Better business performance

An operational fingerling market, stronger associations and improved flows of information were aimed at enhancing the immediate environment for business so that performance could improve. To what extent has this happened? The survey showed that all nurseries, farmers and hawkers had seen their business grow but growth was greater among businesses affected by Katalyst's interventions. The specific reasons for improved performance also emerged from the survey: better cultivation practices; increased investments; stronger client relationships and, as a consequence, faster growth in productivity.

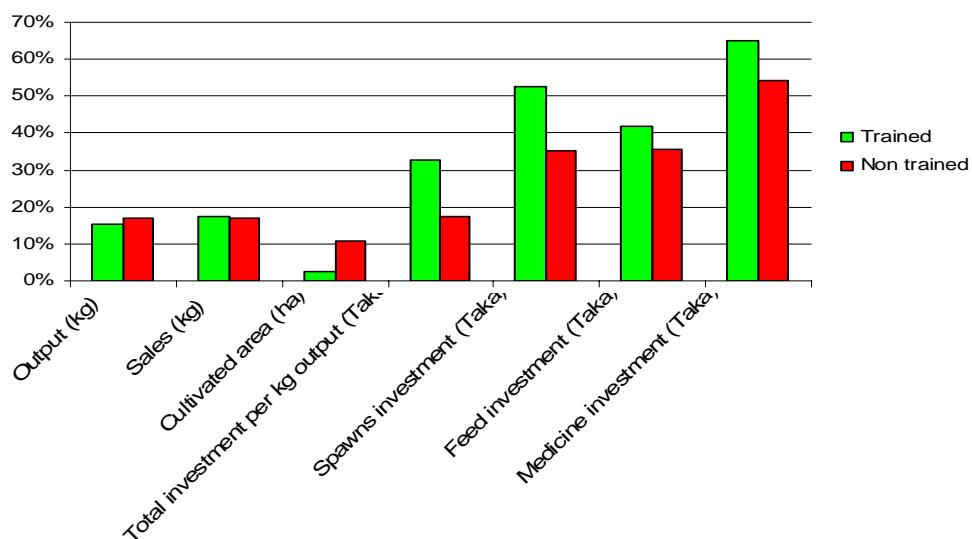
Cultivation practices

Nurseries and farmers influenced directly by Katalyst applied better cultivation techniques (pond preparation, use of fertilizer, feed and medicine) than those in the control group. Consequently, mortality rates in all affected groups had dropped: For example, mortality rate dropped 4% for nurseries (against a 2% fall in the control group), 15% for farmers (against a 3% rise) and 12% for hawkers (against a 6% rise).

Investment

Nurseries and farmers affected directly by interventions clearly intensified their cultivation. Both nursery groups show similar levels of growth in output and sales (Figure 4), but there is a difference in how that growth has been realised. Trained nurseries have sharply increased investment levels in spawns, feed and medicine (main themes of the nursery training) whereas non-trained nurseries have tended to expand through increased cultivation area.

Figure 4: Average relative change (%) in nursery performance (selected indicators)



Among farmers, this difference in investment levels is also evident, especially in relation to feed, medicine and labour.

Clients

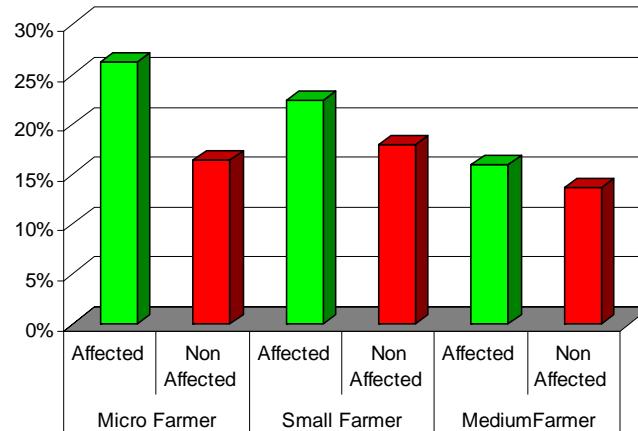
On average, compared with the control group, the affected nurseries and hawkers serve more clients and the number with whom cultivation techniques are discussed has increased. For example, the average number of nursery clients leapt from 60 to 104 farmers (45 to 50 in the control group) and from 33 to 43 hawkers (28 to 34 in the control group). In relation to the content of relationships, the number of hawkers with whom business issues were discussed increased from 17 to 22 (10 to 13 in the control group). Similar differences are evident in relation to hawkers and their clients.

Productivity

Better practices, increased investments and better client relationships resulted in higher pond productivity growth in all groups.

- Nurseries: between 2004 and 2006, trained nurseries saw their own productivity grow by 13% (10% in control group).
- Farmers: productivity increased by a similar amount but with a greater contrast between the affected and control groups (Figure 5). However the highest gains were achieved with micro and small farmers indicating their previous low level of performance and the large scope for improvement. Average net additional productivity for farmers as whole is 6% (22% compared with 16%). Most farmers appeared to change practices in the season after the nurseries were trained (2005) and consequently, saw a steep rise in productivity in 2006. For all affected farmers, growth during 2006 was stronger than in 2005 whereas in the control group productivity growth slowed down during 2006. As illustrated in Box 6, particularly poorer farmers need time to be convinced before investing in and applying better cultivation techniques.
- Hawker's productivity (fingerlings sold per selling day) also increased relatively faster for those who bought from trained nurseries and profitability increased by 14% (2% in the control group).

Figure 5: Productivity growth for different farmers groups (2004-2006):



Outputs

Overall production among both groups of nurseries increased similarly. But among farmers there are notable differences. Aggregate production in the affected groups increased by 2% more than in the control group but this overall position hides a more revealing contrast. While for larger farmers there is virtually no difference, smaller farmers who buy from trained nurseries increased outputs by 6% more than the control group, confirming that it is they who have been the greatest beneficiaries.

Box 6: Results from the nursery training for Mr Zahid

S. M. Zahidul Islam is a 35 year old nursery owner who started his business in 2002 after returning from Qatar where he had worked as a chauffeur. Before leaving for Qatar, he had been a fisherman and with fifteen others leased an open water body from the government from which he earned a modest 15,000 BDT a year. After his return, he decided to invest in a nursery: it was a profitable business and the two small family-owned ponds of 0.12 ha were more suitable for rearing fingerlings than for big fish. All his brothers had left the family land for salaried jobs.

From the outset, Zahid showed himself to be a dynamic entrepreneur who provided 'extra' services to his clients. He ensured that the fingerlings bought from him were properly released in their ponds. If done wrongly, this caused high mortality and many complaints about bad quality. In this way he minimised risk and built himself a good reputation.

After a year, he participated in training from the YDD on pond preparation. Two years later, in 2005 he participated in the nursery training that was organised by the FFA. He remembers the content well. The pond preparation part was a 'refresher training' for him but the issues of fertilization, feed and disease control were all very new. Also, he vividly recalls the role-play of how to build customer relations by engaging with them and offering service.

The training had motivated Zahid to go more often to market to meet fish farmers. If he heard someone complain about his fish, Zahid would volunteer to teach him how to grow fish properly. The word spread and farmers started to come to him for fingerlings, from as far as three kilometres away. Inside the village something else drew attention: Zahid's ponds in which he applied the techniques learned from the nursery training. Farmers saw fish growing double the usual size and became interested in the fishery business. Zahid emphasises the importance of demonstration: 'seeing is believing'. He had frequent interaction with new farmers about the different steps of fish cultivation: they would visit his house, he would check on their ponds, or they would just meet somewhere in the village.

In the last two years, at least twenty new farmers have entered fish cultivation in this way. Interestingly enough, eighteen of those were small farmers with only one pond and little land. These were not the easiest of clients as they were often not ready to invest the amount of time and money needed to make the fish grow properly. Only after experiencing disappointing results the first year they would increase their investments.

Before the nursery training, Zahid's business had already expanded to five ponds with 0.81 ha in total, five full-time employees serving 25 regular clients. Yet, after the training, his business has grown even more spectacularly: he now cultivates seven ponds, covering 1.82 ha, has hired two more full-time employees and has at least 100 clients. Moreover, profits have more than tripled and he now earns Taka 100,000 a year.

5.6 Scale and sustainability

The data from the survey show discernible, positive impact. However, beyond individual changes what can be said about the wider impact on the pond fish sector in Faridpur and, in particular, in relation to the two critical issues of scale and sustainability?

In relation to scale, the methodology allows extrapolation from survey results to the sector as whole. Four hundred trained nurseries represent half of the total nursery population. Being larger and higher-performing nurseries with, on average, twice as many farmer customers than others, conservative estimates are that 13,600 farmers (half the farmers in Faridpur) have experienced positive (additional) benefits attributable to Catalyst's intervention.¹⁸ In particular, amongst this group, farming practices have improved and productivity has grown by 22%. Moreover, the benefits for smaller (and poorer) farmers have been proportionately greater than for larger farmers. The natural learning processes of markets – copying – can be expected to expand this outreach over time. Similarly for hawkers, who are mobile and who

move between nurseries, it is estimated that the trained nurseries have reached 4,400 hawkers, the great majority of the hawker population in Faridpur.

Overall, the survey shows that the impact is real, measurable and significant for key players in the value chain – for half the nurseries, half the farmers (particularly micro and small farmers) and most hawkers. However, the sustainability of this impact is a more searching question.

The associations have been the pivotal conveyors of change, throughout all interventions. They took ownership over the construction of the fingerling market, strengthened their organisations and unusually, organised the nursery training course (and enriched it). Will they continue to organise events aimed at stimulating innovation and act as agents of sector change? There are some positive signs here. Associations have strengthened relationships with members and with external bodies, increasingly representing and lobbying for the sector as a whole. Members are more satisfied and more businesses within the sector consider associations to be important. Trained nurseries consistently named associations as their key source of information on a broad range of business issues. In comparison with others, they are the only source that shows an increase in popularity over the past few years. To a considerable degree, better knowledge and information flow – central to continued improved performance – has become embedded in the practices and norms of the pond fish sector. And, relative to ‘conventional’ projects, which have reported difficulties in disseminating knowledge beyond the duration of the project (see Box 3), Katalyst’s experience has been positive.

Nonetheless, some concerns do exist. If the fingerling market fails to operate again, will this damage FFA? The fingerling market, high profile and visible, was their main initial priority. However, in practice, the evident substantial benefits that have been achieved have taken place without a new market. It seems that members’ attention has shifted to other issues such as training but the ‘failure’ of the market is unlikely to be forgotten. Another uncertainty is whether they continue to source and disseminate new and updated information. Although good relationships exist with government, connections with research organisations such as the World Fish Centre are still weak. And there has been no suggestion that the type of nursery training instigated through Katalyst would be paid for in future by associations. Finally, the strength of associations depends on a few leading members. This common, perhaps inevitable characteristic of voluntary, civil society organisations provides them with their drive and energy but also leaves them vulnerable.

With these caveats, and a reminder of the uncertainty of dynamic market environments, it can be said that the capacity for sustainable development in the sector has improved. This is a significant difference with – and an advantage over – ‘conventional’ interventions that emphasise, direct, external delivery.

5.7 And the poor ...?

Katalyst’s end-objective is to reduce poverty. Although its immediate focus is on services and business level change, and although tangible change at poverty level is expected to require more time, the survey brought out a number of changes that benefit poor people explicitly: from increased output that raises consumption and reduces market prices of table fish; from higher incomes from their fishery businesses; and from more employment opportunities.

Increased fish consumption

Poor people benefit from a greater supply of fish – their main source of animal protein. Aggregate fish output in Faridpur has increased faster because of Katalyst’s interventions. The survey confirmed that producers increase their own consumption as output increases, broadly in line with productivity gains. The strongest increase in consumption was seen among affected micro and small-scale farmers (i.e. poorer farmers) where consumption increased by 18% and 16% respectively. A more indirect but equally important result is that, in the normal operations of the market, prices drop (relatively) as supply increases. Although not captured in the survey, availability of fish for poor consumers can be expected to have improved accordingly.

Higher incomes

Survey data confirmed that large numbers of poor families earn their main incomes from hawking, farming and (to a lesser degree) nursery operations.¹⁹ Increased incomes from fisheries have hence played an important role in lifting a considerable number of these families, especially farmers, out of poverty over the past few years (Table 4).

Table 4: Percentage of survey respondents that fall below poverty line:²⁰

Year	Hawkers	Micro farmers	Small farmers	Medium farmers	Nurseries
2004	82%	68%	53%	50%	32%
2006	73%	53%	43%	33%	23%
Change	- 9%	- 15%	- 10%	- 17%	- 9%

Amidst this general picture of poverty reduction, how much can be attributed to Katalyst? The relatively high productivity gains of the families affected by Katalyst can be expected to have led to proportionate income benefits. As illustrated in the case studies (see Annex Four), poorer farmers have different livelihood strategies and react differently to increased outputs – for example, some increase sales and others consumption. However, overall, the number of poor families reduced faster for most groups affected by Katalyst's interventions.

Increased employment

Labour in both nurseries and farms is predominantly seasonal and paid.²¹ Only one-third of the nurseries have one to two full-time employees and none of the farmers have any full-time employees. Nurseries and farmers do have family members providing 'free' labour, but typically, just one or two. Seasonal paid labour, typically poor fishermen (see Box 7), is widespread and the most important labour type: in 2004, nurseries hired on average six seasonal wage labourers and farmers between four and five.

Being a growing sector, the overall workload increased in all businesses. Virtually all employees were contracted for more days per year and new people have been taken on. Most employment has been created at farm level and particularly among clients of trained nurseries: twice as much employment was created by affected farmers. Extrapolating the survey figures to the sector as whole, net additional seasonal employment at farm level caused by Katalyst's interventions can be estimated at 4,488.²²

It should be noted that virtually all employment in pond fish is male and there is no evidence that women have increased their participation because of the interventions. Nonetheless, their position has not worsened and, like other members of households, they have been benefited from higher incomes and consumption.

Overall, Katalyst's interventions have improved fish availability, increased incomes for businesses (especially for smaller/poorer farmers), and created additional seasonal employment. Growth has been accelerated and made more inclusive.

Box 7: Changes in the fisheries labour market – the case of Mr. Kumar

Kumar is a member of a traditional Hindu fishing community that had unrestricted access to publicly owned water bodies until four years ago. When the government started to give out the water bodies to individuals, they gradually lost their livelihood and were forced to find employment elsewhere. Initially, their fishery skills were little in demand. Farmers from the village of Damodari would hire them for just a few days a month. This was a period of real impoverishment – and the community still bears the scars from this difficult period and seemed to be impoverished.

However, the recent growth in pond fish cultivation in Damodari has meant a change in fortune. In 2005 they started to be hired at least once or twice a week and in 2006 this increased further to three or four times a week, each day bringing in 100 BDT and a good meal of fish. Before the privatization of the water bodies Mr. Kumar earned 500 BDT per day catching fish, roughly 22,500 BDT per year. He estimated that his income had been reduced by half to around 13,000 BDT per year after the privatization. With the increasing demand for his services, he now earns around 20,000 BDT per year.

6. Key lessons and conclusions

The experience of Katalyst in the fish sector in Faridpur has been one of positively influencing growth processes. It is distinctive in a number of ways. Building on a sound understanding of the sector, it saw that it could accelerate growth by addressing the problems of poor availability of quality inputs and weak information and knowledge on cultivation techniques. It recognised that the underlying cause of these problems lay in weak market linkages, and that growth could only be sped up in a sustainable way by enhancing these market based relationships.

Katalyst worked with fisheries associations as partners for a number of reasons. They had a positive and sector-wide image, were eager to ‘do something’ and had potential to exert influence on the sector in the future. Throughout, interventions evolved through interaction with them (and others) and in pursuit of a future vision of better, more informed relationships between market players promoting high standards throughout the sector. Katalyst has constantly invited the associations to take a leading role and so build their sense of ownership and responsibility.

The three sets of interventions supported by Katalyst that are the focus of this case – fingerling market preparation, organisational strengthening and nursery training – have generated discernible change in the service environment around businesses:

- Nurseries, farmers and hawkers have a better understanding of the importance of knowledge and information;
- Associations are more active and recognised as providers of useful services;
- Knowledge and information have become more embedded in market relationships.

Against these successes, the fingerling market, the original priority of associations, operated for only one year before infrastructure problems forced its closure. Whether this re-opens or not will depend on the commitment of associations because Katalyst has stuck to its original position, namely that the construction and operation of the market was fundamentally the business of the associations. Yet even this experience has arguably strengthened the resolve of associations to play a successful, active role. This ‘failure’ in the fingerling market needs to be seen in the context of undoubted, substantial additional impacts on fishery businesses, especially smaller businesses. For a cost of 63,000 USD, half of Faridpur’s farmers (13,600), half the nurseries (400) and many of the hawkers have:

- Improved business practices
- Higher levels of investment
- More and stronger client relationships
- Higher levels of productivity

As a consequence, nearly 4,500 additional seasonal jobs have been created at farm level only, income levels have increased considerably and consumption has grown. Overall, the project has contributed significantly to poverty reduction in Faridpur.

Throughout, Katalyst's involvement in the pond fish sector has been consistent with its general market development approach. From its experience a number of clear messages emerge that throw light on the approach in practice.

Growth can be accelerated in an inclusive and sustainable way

Katalyst has shown that interventions can not only accelerate growth processes but, as importantly, shape these to be so that they are more inclusive and sustainable. Without these interventions, smaller-sized farms in particular would have been, to some degree, 'left out'. Moreover, since the locus of change is rooted among market players who have a strong incentive to continue to pursue similar change in the future, there are grounds for optimism that change and impact will be sustainable. The validity of the basic premise of Katalyst's approach, that through considered and focused interventions, the nature of growth can be influenced, is re-affirmed by this case.

How to work with associations effectively

Although wider experience shows that working with associations can be difficult, the associations in this case have been effective partners and agents of change. Of course, the characteristic riskiness of associations – their voluntary nature, limited capacities and susceptibility to personnel change – is still evident. However, overall, Katalyst's partnership with them has worked: why has the experience here, contrary to the norm, been relatively positive? Much of this can be attributed to the associations themselves who had the vision and energy to pursue change. However lessons also emerge from Katalyst's approach. From the outset they recognised the capacities and ambitions of the associations and sought to build on these. Many – perhaps most – development agencies would have rushed to an instant 'solution' to the problem of the failing fingerling market and used donor resources to finance construction. Katalyst did not. It wanted to see the association mature and take full responsibility and believed that doing 'too much' would undermine this goal.

As their relationship evolved, Katalyst acted less as an initiator of new ideas and more as a sparring partner to the organisations and allowed them to assume a more prominent role in the sector. Not the only force for change – but an important one. Such an approach therefore imposes limits on what agencies can do: the potential and stimulus for change must come from associations.

Recognising the importance of process: giving interventions the appropriate time

Given the scale of achievements in the pond fish sector, the level of resource input from Katalyst appears relatively small. More important than overall amount, however, has been the nature of inputs and in particular the duration of intervention. Katalyst's three year engagement – not full-time but nonetheless 'there' – has allowed space for effective facilitation to take place. Facilitation means recognising and building on ideas which people can buy into; 'plausible promises' into which they are prepared to invest.²³ Although Katalyst's work was built on detailed analysis, the sequence and timing of interventions was not pre-determined. Katalyst did not, for example, plan the nursery training at the outset; it emerged through discussions. Similarly, the early focus on the fingerling market was largely because that was the agenda of associations.

The process of engagement – not always acting, sometimes waiting – therefore allowed Katalyst to expand the boundaries of intervention possibilities. More short-term and intensive interventions are unlikely to have been able to achieve this type of impact.

Annex

Annex 1: The Katalyst approach to market development

Katalyst (officially called DBSM) is a market development project under the Bangladesh Ministry of Commerce, implemented by Swisscontact and GTZ International Services. Phase I of the project, from October 2002 to March 2008, is funded by a donor consortium comprising of SDC, DFID and SIDA. In March 2008 a second phase of the project will start. It will be a continuation of the Phase I, but with more emphasis on replicating the things that were successful to increase outreach, on gender and pro-poorness, on working with partner organisations and on collaborating with the government.

In Bangladesh, half the population can be classified as poor or ultra poor. Whereas growth has been an important engine of poverty reduction in Southeast Asia, the Bangladeshi economy fails to create sufficient decent jobs or opportunities for productive self-employment. A harsh business environment, dysfunctional input markets and underdeveloped support services make it hard for Bangladeshi enterprises and farms to compete with low-cost products elsewhere in the region.

In Phase I, Katalyst developed an approach that manages to unlock the potential of the private sector to grow and to create opportunities and employment for small enterprises, farmers and laborers. Based on an in-depth understanding of product and service markets and private sector realities, Katalyst seeks entry/leverage points into the economy to induce information, innovation and best practices for higher productivity, to improve the functioning of input markets and marketing networks, and to improve the enabling environment. In Phase I Katalyst built up an extensive network of private and public sector partners to achieve this, ranging from large agro-processors and telecom service providers to small compost producers, lead farmers, sector associations and local government. Working indirectly through these entry/leverage points ensures sustainability and outreach.

Katalyst estimates that at the end of 2006 **167,000** small producers and farmers were benefiting from access to better services and essential inputs. This number is likely to increase to **728,000** by 2009 as the markets through which these are supplied continue to reach new recipients (based on interventions in the first 5 years of Katalyst). Katalyst estimates that Phase I activities will create **183,000** jobs for the poor by 2009.

Some characteristics of the project:

Methodology Katalyst started as a “real” BDS project in 2002, assuming that better business service markets increase competitiveness and economic growth. Over the 5 years of the first phase, the field has changed fast. New focuses like Market Development, MMW4P¹, Value chain development and Enabling Environment came. Katalyst’s methodology also developed, learning from others and from its own successes and failures.

Katalyst has a number of internal guidelines how to operate, how to choose and analyse markets, how to assure ownership and buy-in from the private sector and where to subsidize to what extent. These guidelines are not rules; they help avoiding mistakes, but should never become a harness. Only three things are important:

- * From the offset of each intervention, there has to be a clear “after picture” how the private sector could improve its competitiveness to reduce poverty; a picture that is economically sound and where all players play their natural role.
- * The interventions have to address the constraints and opportunities to reach this “after picture”.
- * A deal has to be made with the private sector; a deal that stimulates them to do what they would not have done otherwise, that is fair for the market and that gives value for money for the project and the company.

Service markets. Katalyst does not directly give support to the firms and farms in the sectors it is active in. It looks for leverage points where the project can support a few companies to reach many. It works with these leverage points that have a business interest to work with the

¹ Making Market work for the poor

firms and farms, now and in the future. Besides commercial service providers, the project often works with sector associations, input companies or with large companies that interact with many small ones in the value chain. The services these companies give to the firms and farms in the sectors are often related to product, production or market information.

Poverty The first Millennium Development Goal clearly sees economic growth and income as a prerequisite for poverty reduction. There is enough evidence that economic growth in itself reduces poverty. It is the challenge of projects like Katalyst to stimulate these parts of the economy that have the biggest impact on poverty reduction, to stimulate sustainable pro-poor growth. The relation between increased competitiveness, economic growth and poverty reduction is dynamic and very complex and for a project almost impossible to fully understand. Still the project sees some clear routes:

- * Urban and rural daily labourers are certainly among the poor. Productive and sustainable jobs created for this group directly reduce poverty.
- * Increased income for small enterprises and farms is mainly used locally; to improve ones house, to order a new dress from a local tailor or to buy more vegetables or chicken meat. This stimulation of the local economy clearly reduces poverty, although it is difficult to measure how much.
- * There are strong indications that farmers that change from rice production to cash crops like vegetables, maize or potatoes often lift themselves out of poverty. To sustain this mechanism, it is important to assist farmers to make the step, as well as to improve the productivity in these sectors to allow more to enter.

Portfolio of sectors and markets Katalyst works in around 20 sectors, often in more than one area or market per sector. Taking risk and accepting some failures is part of doing business, also for Katalyst. A portfolio of markets allows a project to take risk. A constant adjustment of this portfolio of sectors and markets is required to find the right balance between high potential / high risk versus lower potential lower risk, but also taking into account issues like: an urban and rural balance, stages of development of each market, impact and outreach potential, short and long term impact, pro-poorness and competitiveness, interests of donors and the government, synergies between sectors, cost and impact, absorption capacity of the private sector, availability of partners and Katalyst's competences.

Role of government. Bangladesh differs from several of its Asian neighbours by the fact that the role of the government in the private sector is very limited. This makes it more difficult to work through the government. Private sector companies are therefore the main partner for Katalyst.

Farms and firms The target group for Katalyst are small commercial farms and firms. Where possible the project targets its interventions at those farms and firms that are so small that they have the biggest impact on poverty, but that are large enough to innovate. Innovation means taking risk for the very small ones this is often not an option. Fortunately these very small ones will copy the innovations later from the risk takers.

Human resources. Analyzing the economy, finding opportunities in this and making deals with small and large private sector companies asks for well educated professionals with a business mentality. This is not the standard profile of development staff, nor are these people easily available in the market. Katalyst hired young professionals and invested much in training.

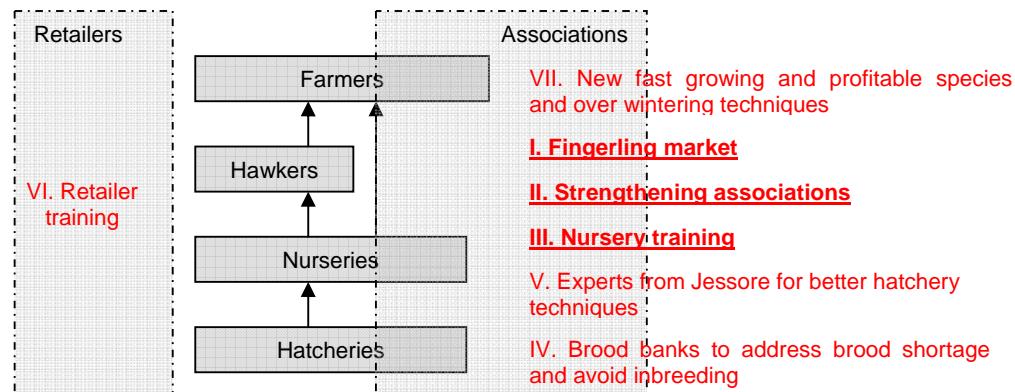
M&E. Measuring results and impact is one of the major challenges in private sector development projects with an indirect approach. Katalyst developed an M&E system that is based on impact logics for all interventions and markets. The system is in the first place a management tool, but it can also predict and assess impact that not only justifies the current activities, but also paves the path for similar future initiatives.

Annex 2: Other Katalyst interventions in pond fish

Katalyst adopted a multi-faceted intervention strategy in pond fish addressing various key constraints and engaging at different levels of the sector. It identified four main problems: limited quantity of brood fish and spawns (hatchery level); absence of specialised inputs (throughout the chain); poor quality fingerlings (nursery level); and poor pond cultivation techniques (farmers level). This case study focuses on the last two problem areas and the interventions related to I, II and III underlined in Figure 6).

However, Katalyst also undertook a number of other activities that addressed the other constraints (and has even started new interventions in reaction to emerging issues). These have not been the focus of this case, either because they are smaller in scale or results have not (as yet) been as evident. But nonetheless they form part of the context of the case.

Figure 6: Katalyst interventions in the pond fish sector in Faridpur



Constraints at hatchery level were addressed in two ways: by facilitating the establishment of brood banks and by bringing in hatchery 'experts' (skilled technical/operational staff) from Jessore. There was just one brood bank in Faridpur and the quantity and quality of brood fish was poor. Through a feasibility study and the development of guidelines (IV), Katalyst managed to convince a small number of farmers to invest in a brood bank business. The engagement with Jessore experts (V) was meant to bring better technical expertise to Faridpur hatcheries. Buying technical advisory inputs is common practice in the more competitive environment of Jessore but not in Faridpur. Katalyst informed the hatcheries about Jessore practice and distributed a list of experts.

The absence of specialised inputs was addressed through (VI) retailer training. Retailers were trained by Syngenta, a multinational agro-inputs producer, about the latent demand for specialised inputs such as feed and medicine and about the value of providing useful information (embedded services) to clients.²⁴

After nearly two years of working in the sector, new activities were designed to address the lack of innovation at the farmers' level. Katalyst facilitated an innovation process led by the associations in which nurseries were trained on new species and advanced feed management and on techniques for over-wintering combined with necessary application of chemicals to stock fingerlings in high density levels (VII). Both interventions can be seen to build on the initial nursery training program and address new technical issues. Introduction of non-traditional species allows for more production per season; over wintering lengthens the season. In both cases the association coordinated the trainings and hands on demonstration programs, bringing together nurseries, feed company, chemical company and farmers.

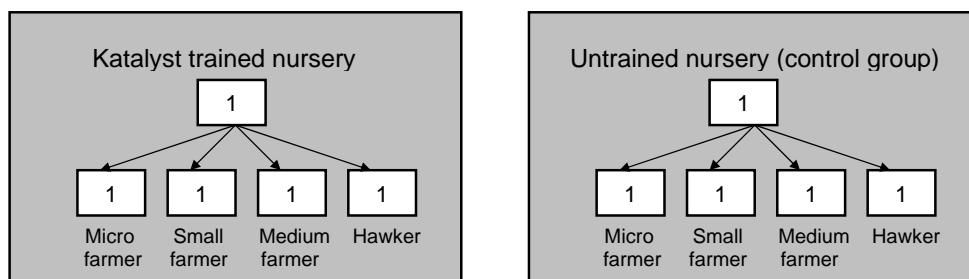
Annex 3: Survey methodology and analysis

Central to understanding Katalyst's experience in the pond fish sector has been an impact survey of key actors. The survey sample was drawn from two districts within Faridpur region: Faridpur (district) and Kotalipara. Faridpur is the region's administrative centre, situated sixty-four kilometers from Dhaka and home to the Faridpur Fisheries Association. Kotalipara, situated south of Faridpur, is more remote with a smaller population, a lower level of economic activity and higher levels of poverty. The Kotalipara Fisheries Association was the second association to engage with Katalyst.

In both districts, 25-30 trained and 30 untrained nurseries were selected randomly, the latter as a control group.²⁵ Trained nurseries benefited directly from Katalyst's interventions and have relationships with one of the associations and were selected through their networks (Figure 7). The control group was drawn from the same district. Each nursery cited four different clients who were subsequently interviewed: one "micro"-farmer (farming a pond less than 0.30 acres), one "small" farmer (0.30-0.60 acres), one "medium" farmer (0.60-1.0 acres) and a hawker. In addition, to be included, farmers had to sell at least 75% of their production; if below this level, they were excluded.

It is possible that the control group (either nurseries or farmers) benefited from spillover effects (i.e. learning from the improved practices in the trained group) which would tend to reduce observed differences between the groups. The assumption here is that there are no spillover effects. Results on additional impact reported in the case can be regarded as conservative figures.

Figure 7: Sample methodology per district



Three questionnaires were designed (for nurseries, farmers and hawkers respectively) that captured changes in business size, volume, practices, investments, relationships and information flows and in the associations over a period of three years. After excluding twelve cases due to missing values, the total database contained 563 businesses: 111 nurseries (54 affected, 57 control), 340 farmers (164 and 176) and 112 hawkers (56 and 56). The data collected was then subjected to various statistical analyses, the most important of which have been summarised in the case.²⁶ Extrapolation was based on the survey results that showed that, on average, nurseries pass knowledge on to one third of their clients (34 farmers and 22 hawkers).

Table 5: Sample size

Respondent group	Faridpur		Kotalipara		Total
	Trained	Non-trained	Trained	Non-trained	
Nursery	30	30	25	30	115
Micro Fish Farmers	30	30	25	30	115
Small fish farmers	30	30	25	30	115
Medium fish farmers	30	30	25	30	115
Hawkers	30	30	25	30	115
Total	150	150	125	150	575

Annex 4: Stories of Change



S. M. Zahidul Islam is a 35 year old nursery owner who started his business in 2002 after returning from Qatar where he worked as a chauffeur. Before leaving for Qatar he had been a fisherman, and along with 15 others, leased a *bil* from the government from which he earned a modest Taka 15,000 a year.²⁷ After his return he decided to invest in a nursery: it was a profitable business and the two small family-owned ponds of 0.12 ha were more suitable for rearing fingerlings than for big fish. All his brothers had left the family land for salaried jobs.

Right from the start of his business Mr. Zahid showed himself to be a dynamic entrepreneur who provided 'extra' services to his clients. He ensured that the fingerlings bought from him were properly released in their ponds. If done wrongly, this would cause high mortality and many complaints about bad quality. Hence, Mr Zahid minimized risk and built himself a good reputation.

Table 6: Changes in Mr. Zahid's business

	2005	2007
No. of ponds (Total size)	5 (0.81 ha)	7 (1.82 ha)
No. clients	25	100
No. employees	5	7
Profit	30,000 BDT / 923 USD	100,000 BDT / 1538 USD

was a 'refresher training' for him, but the issues of fertilisation, feed and disease control were all new. He also vividly recalls the role-play of how to build customer relations by engaging with them and offering service. Before the nursery training, his business had already expanded to five ponds, 0.81 ha in total, five full-time employees and roughly 25 regular clients. In the two years after the training he expanded further to seven ponds, covering 1.82 ha, hired two more full-time employees and counts 100 clients. His profits have tripled in this period (see Table 6).

After the training, he started going to the *haat* more frequently to meet fish farmers.²⁸ If he heard someone complain about his fish he would volunteer to teach him how to grow fish properly. The word spread and farmers started to come to him for fingerlings from as far as three kilometres away. Within the village something else drew attention: Zahid's ponds, in which he applied – and *de facto* demonstrated – the techniques learned from the nursery training. Farmers saw fish growing to double the usual size and became interested in the fishery business. Mr. Zahid emphasises the importance of demonstration: 'seeing is believing'. He had frequent interaction with new farmers about the different steps in the process. They would visit his house, he would check on their ponds, or they would just meet somewhere in the village. In the last two years, at least twenty new farmers have entered fish cultivation in this way. Interestingly enough, eighteen of those were small farmers with only one pond and little land. These were not the easiest of clients as they were often not ready to invest the amount of time and money needed to make the fish grow properly. Only after seeing disappointing results in the first year would they increase their investments.

Two years after the training, Zahid is doing well in his business, employing an increasing number of day-labourers to manage his ponds and bringing small farmers with idle ponds into profitable fish cultivation. While walking through the village one can meet his clients.

Sohrab Hossain Sardar is one such new entrant who started rearing fish in 2006 encouraged by Mr. Zahid's high returns in the previous year. Mr. Hossain, 70 years of age, is a retired police officer with four sons who are all in service, living away from home. He owns 1.65 acres of land that he leased out as he is too old to work on it himself. He claims that what he receives from the lease is just enough to feed him and his wife for six months. For the rest of the year he depends on his sons for support, but this is a sensitive issue. His

One year into business, he attended a Youth Development Department course about pond preparation. Two years later he participated in the nursery training that was organised by FFA. He remembers the content well. The pond preparation part

daughters-in-law weren't too keen on supporting him and for that reason he was looking for additional income.

In April 2006, Mr. Hossain started fish cultivation in his idle 0.10 ha pond next to the house, after having spent a few informal 'learning sessions' with Mr. Zahid. Fingerlings worth 3,500 BDT were released in the pond according to Mr. Zahid's instructions but the fish didn't grow very fast. Mr. Hossain confessed that he hadn't followed Mr. Zahid's advice on feed. Mr. Hossain lacked the energy and perhaps also the funds to feed the fish every few days. To get the best size with the least investment, he kept the fish in his pond as long as possible. If he had leased out the pond, he would have earned Taka 2,500. Now, with Mr. Zahid's support and without following all his 'best practices', he still managed to sell his fish for 20,000 BDT / 308 USD. With around 5,000 BDT invested in labour to 'net' the pond regularly, to increase the level oxygen in the water, this still makes a nice supplement to a meagre pension.



Abdul Hakim Sardar lacks Mr. Hossain's commercial orientation but still benefits from Mr.



Zahid's advice. He is a 35 year old farmer from a poor background who struggles to remember whether he spent two or three years in school. He lives with his family of five surrounded by his extended family of twenty persons on a small compound made from clay and straw huts. Six years ago, Hakim decided to utilize his 0.1 ha pond, which was idle at the time, to cultivate fish to feed his family. His main source of income comes from 1.8 ha of land (half owned, half leased) where he grows paddy, jute, onions, and lentils and from which he made a profit of about 12,000 BDT last year.

When he started fish cultivation, he bought fingerlings from hawkers but the mortality rate was so high that he switched to Mr. Zahid. He learnt about lime and how to prepare his own supplementary feed and his fish started to grow twice as big. This meant a substantial change, not only for Mr. Hakim's family, but also for his extended family (see Table 7).

Table 7: Changes in Mr. Hakim's business

	2004	2005
No. fingerlings bought	180	500
Investment in fingerlings	540 BDT	1,500 BDT
Investment in lime	Nil	40
Mortality rate	40%	10%
Average fish size	0.25 kg	0.6 kg
Harvest	27 kg	270 kg

members. Before, Mr. Hakim would catch just enough fish to meet his minimum dietary standards and only for his own family. Now, having invested an additional 1,000 BDT in fingerlings and lime and by preparing his own supplementary feed, he is able to feed not only his own family but the entire extended family. He even managed to catch enough for as much as eight meals per week for all 25 family members. The mortality rate of his fish has gone down dramatically and they grow much faster. Now that he no longer has to buy fish, Mr. Hakim is investing in another important aspect of his livelihood: he has started building a brick house (see photo).

The fish from the pond is for their own consumption. Mr. Hakim is very firm about having fish at least four times a week as he saw people falling ill consuming less than that. The rest of the week the family is 'vegetarian'. When there is no fish from their pond, the family spends around 50 BDT every *haat* day on half a kilogram of fish, enough for two meals for all five family

Abdul Jalil Meej is a more commercial farmer of 48 years who has some money to invest. Yet even he only invested in commercial cultivation after he had seen Mr. Zahid's impressive productivity and started commercial production just two years ago. Mr. Jalil has been cultivating fish for six years in his two small family-owned ponds of 0.2 ha in total, initially only to feed his family. His cash earnings came from 1.2 ha of land with paddy and jute and a small timber store. Unlike the other fish farmers, he could specify in detail all the cultivation practices he learnt from Mr. Zahid (see Table 8).



Table 8: Changes in Mr. Jalil's business

	2004	2005
Proper mud layer	No	Yes
Lime	Nil	400 BDT
Fertilizer	Nil	1,400 BDT
Organic fertilizer	Nil	600 BDT
Fingerlings	8,000 BDT	6,000 BDT
Feed	Nil	10,000 BDT
Medicine	Nil	400 BDT
Day labour	5,000 BDT	5,000 BDT
Guard	Nil	24,000 BDT
Mortality rate	10 %	4 %
Yield	700 kg	1,700 kg
Revenue	22,000 BDT	100,000 BDT
Profit	9,000 BDT / 138 USD	52,200 BDT / 803 USD

Mr. Jalil demonstrates the value of better balanced stocking density and feed management. With the space and the feed to grow properly, fish grows much faster and can double yields. Since bigger fish also fetch a much better price in the market, his profits had jumped up to almost six times as much as recorded before Mr. Jalil received advice from Mr. Zahid. That includes the extra costs of a full-time guard that stayed near the ponds to protect and feed the fish. Fish has become Mr. Jalil's main source of income. Profits were invested in a cow and a brick house.

As farmers expand their fish cultivation additional jobs are also created. For intensive ponds like Mr. Jalil's, it is usual for one person to be hired to guard and feed the fish. All ponds require netting every 15 to 30 days, for which three or four day labourers are engaged. When the fish is ready to be sold, four or five day labourers are required every twenty days to catch the fish. In Damodari village, the guards are usually Muslims, while the day labourers are often Hindu fishermen from an adjacent village, like Mr. Utpal Kumar Biswas.



Mr. Kumar is a member of a traditional Hindu fishing community that had unrestricted access to publicly owned *bils* until four years ago. When the government started to give out the *bils* to individuals, they gradually lost their livelihood and were forced to find employment elsewhere. Initially, their fishery skills were little in demand. Farmers from Damodari would hire them for just a few days a month. The community still bore the scars from that period and seemed to be impoverished. However, the recent growth in pond fish cultivation in Damodari meant a change in fortune. In 2005

they started to be hired at least once or twice a week and in 2006 this increased further to three or four times a week, each day bringing in Taka 100 and a good meal of fish. Before the privatization of the *bils* Mr. Kumar earned Taka 500 per day catching fish, roughly Taka 22,500 per year. He estimated that his income had been reduced by half to around Taka 13,000 per year after the privatization. With the increasing demand for his services, he now earns around Taka 20,000 per year.

Finally, as fish cultivation becomes more productive and profitable, the benefits start to trickle down to the local community also in more indirect ways. Farmers like Mr. Jalil and Mr. Hakim for instance, have begun to build brick houses that again require at least four or five full-time labourers for a month.

END NOTES

¹ Katalyst's implementing partner IDE is a US-based NGO that had local presence in the field and experience in pond fish interventions.

² DOF, DAE and Department of Livestock Services.

³ In 2000, pond fish accounted for roughly 10-15% of annual total family income in Faridpur, which had grown to more than 30% in 2006 (FTEP-II).

⁴ It is generally acknowledged that DoF data are not precisely accurate and that catch from inland capture has declined far more steeply than indicated here.

⁵ General Economics Division, Planning Commission, Government of People's Republic of Bangladesh, *Unlocking the potential: National Strategy for Accelerated Poverty Reduction*, October 2005.

⁶ De Graaf, G, and A. Latif, *Development of freshwater fish farming and poverty alleviation: a case study from Bangladesh*, 2002.

⁷ For example, one-third that of Malaysia or the Philippines.

⁸ DFID, DANIDA and USAID, *The Future for Fisheries: findings and recommendations from the fisheries sector review and future developments study*, 2003.

⁹ Improving the supply of fry from brood banks was the focus of another intervention (see Annex Two).

¹⁰ IFAD Aquaculture Development Project, *Project Completion Report*, 2006, and Fourth Fisheries Project, *Project Report 2: Sample Impact Studies on the Aquaculture Extension and Training Component*, 2006

¹¹ A contract was agreed upon between both organisations indicating their respective responsibilities.

¹² Relationships between Katalyst and the associations continued after this period, concerning other interventions (see Annex Two).

¹³ As had happened in Katalyst's work in the Rangpur vegetable sector (see Katalyst Case No. 1).

¹⁴ An NGO called *Padakhep*.

¹⁵ This includes person days (staff and management, including expatriates), contracts, materials, travel expenses and a 10% overhead charge.

¹⁶ WorldFish Centre Bangladesh, *Development of Sustainable Aquaculture Project: Low cost aquaculture systems for the poor*, Impact statement, 2006.

¹⁷ Nurseries are still the dominant member group so these findings mainly reflect their views.

¹⁸ This is actually two thirds of the total number of farmers as estimated originally by Katalyst but the sector has grown considerably and survey results suggest that this is now more likely to present around half the farmer population.

¹⁹ Respondents often slightly underestimate income levels but the overall size and direction of change is fairly clear.

²⁰ Income poverty as defined by the Bangladesh Institute of Development Studies (BIDS) as below 12,500 BDT per capita.

²¹ Hawkers are trading businesses – often operating on a seasonal basis – with no employees.

²² Higher employment and higher pond productivity are consistent with each other since better farm practice (e.g. more regular feeding) often involves more labour – labour being a comparatively small cost.

²³ Douthwaite, B., *Enabling innovations: a practical guide to understanding and fostering innovation*, Zed Books, 2002.

²⁴ This intervention was similar to that undertaken by Katalyst in the vegetable sector as described in the Katalyst Case No 1. *Bringing Knowledge to Vegetable Farmers* (<http://www.katalystbd.com/downloads.php?catid=3>).

²⁵ 'Trained' means having participated in the nursery training facilitated by Katalyst.

²⁶ More information on the survey design, questionnaires and summary data sheets can be obtained from Marieke de Ruyter de Wildt at global@springfieldcentre.com

²⁷ A *bil* is an open water body.

²⁸ A *haat* is a local market, that is held a few days in the week.