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# Life after a cluster intervention

## Insights from shrimp farming in Bangladesh

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## Introduction

Globally, organizing production into clusters has been a popular prescription for agricultural development, embraced enthusiastically by donor agencies and governments. Clusters can often reduce the costs of delivering extension and supplying inputs. In contexts where farmers tend to have small-scale operations, coordinated cluster farming allows for aggregation of produce, reducing the transactions costs of marketing. A key challenge, however, with organized clusters as opposed to clusters that may emerge spontaneously, is that many of them implode when the program that helped establish these clusters comes to an end (Belton et al. 2025; Murray-Prior et al. 2012). Yet, this widely acknowledged phenomenon remains under-researched.

This project note summarizes insights from a three-year research project focused on an ambitious cluster intervention by the Department of Fisheries (DoF), Government of Bangladesh for shrimp farmers. In 2022, as part of a World Bank funded project, the Department of Fisheries organized smallholder shrimp farmers with contiguous ponds into clusters in Khulna, Satkhira and Bagerhat districts in southwest Bangladesh. Each cluster brought together 20-25 farmers, with pond sizes of at most 1.5 acres in size, to deliver training on best management practices, supply inputs, and encourage coordination. Group members were encouraged to follow a suite of management practices aimed at raising farm productivity, reducing the incidence of shrimp disease, and increasing the supply of raw material for processors. These measures included farming *bagda* shrimp *(P. monodon)*—Bangladesh's main export species—in monoculture, raising shrimp stocking densities, stocking disease-free shrimp larvae (SPF-PL), using factory-made feeds, deepening ponds, erecting biosecurity fencing, and coordinating stocking and harvesting activities with other group members. The costs of deepening ponds and adopting other improved management practices were borne by farmers themselves, but the clusters that made these investments received free SPF-PL and feed as incentives for doing so. The goal of this cluster intervention was to promote sufficient volumes of shrimp for processing plants for export, eventually paving the way for instituting traceability systems and group-based sustainability certification, increasingly a requirement in global retail markets. Even at the time of inception, the cluster program was intended as a time-bound two-year project that would end in 2025.

This note presents preliminary results from a research effort following the conclusion of the program to answer two broad questions: First, what happened after the project ended? How many of the clusters survived and what practices did cluster members continue to follow? Second, what characteristics and dynamics distinguish clusters that survive from those that do not?

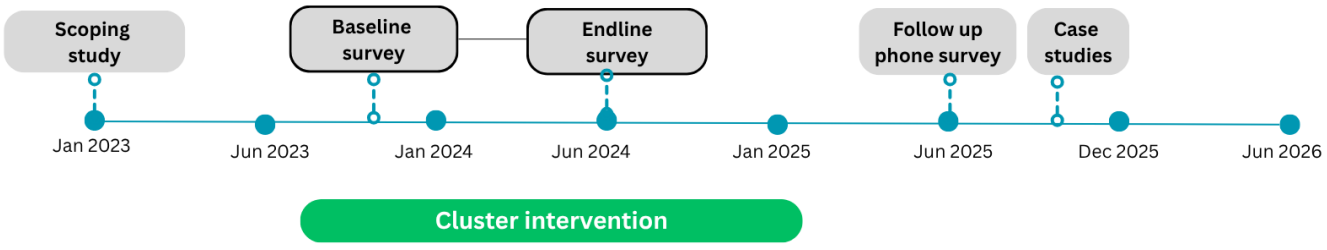
## Research study

The findings presented in this note emerge from a larger study to assess the impacts of DoF's shrimp cluster intervention, via baseline and endline surveys of 864 farmers across 60 clusters in 58 administrative unions in 16 subdistricts or upazilas, conducted in 2023 and 2024 respectively (Figure 1). Our research found that the cluster program was very effective in the short run in promoting better farm management practices but had not improved yields or net profits in the time frame for our evaluation (see Kabir et al. 2025; Narayanan et al. 2025 for more details). By mid-2025 support activities including training had wound down. We then conducted a follow-up study focusing on revisiting these shrimp clusters from our impact evaluation study, to document the afterlife of this cluster intervention.

Our follow-up study comprised two components. First, in May-June 2025, we implemented a phone survey, reaching out to the president or secretary of each of the 60 shrimp clusters. These 60 clusters had all been randomly selected for the impact evaluation study reported above, from among the 300 clusters formed under the program. We successfully reached 56 of them. The short survey focused on the status of the cluster post-program, how decisions were made by members on whether to continue working together as a cluster and the reasons for this decision. We also documented which of the practices actively promoted under the cluster program continued to be followed by at least some of the members.

A second component of the study is a set of case studies. We identified individuals from 10 purposively selected clusters for in-depth case studies, five that had survived and five that did not, with one case study among each focused on the experience of women cluster members. Via in-depth in-person interviews, we documented their experiences as cluster members and their perspectives on the way the group functioned. Whereas the respondents of the phone survey were cluster leaders, the case study interviews focused on both regular members and cluster leaders to capture a variety of perspectives. Interviews for these case studies were conducted in September-October 2025, in Bangla, and transcribed and translated in full by a member of the research team.

**Figure 1:** Research study timeline




**Source:** Authors,

## Findings

### *How many clusters survived beyond the life of the program?*

Most of the clusters confirmed that the program officially ended by June 2025, with some clusters receiving technical advice and training until just before the program concluded (Table 1). Of the 56 clusters we interviewed, 33 clusters (59%) reported that the farmers belonging to the cluster continued to function as a cluster. Virtually all the respondents from these continuing clusters noted that it was a collective decision among members to continue working together. Most reported continuing to meet regularly and operating the bank account they used during the cluster project. While a 59% survival rate is certainly a majority, it is hard to place this in comparative perspective since few studies of clusters elsewhere have documented post-program survival rates explicitly. We note here that our phone survey was carried out almost immediately after the project ended and that our sample is a small, albeit randomly selected, sample of the total of 300 clusters in the project overall.

As for the 23 clusters that no longer functioned as a group, in 16 of these, members collectively discussed their future as a cluster; in the rest, i.e. seven of them, respondents noted that there was no clear decision or discussion to end coordination and that it ended when the program itself ended. However, an overwhelming 91% (i.e. 21 of the 23) of the cluster-leads in these clusters that did not survive noted that they would have liked the cluster to continue.

**Table 1:** A summary of results

| | Clusters that did not survive (N = 23) | | Clusters that survived (N = 33) | |
|---|---|---|---|---|
| | (%) | Number | (%) | Number |
| Stated that the program officially ended, or did not receive support in 2025 | 100 | 23 | 84.8 | 28 |
| Received training or support of any kind in 2025, irrespective of program status | 0 | 0 | 24.2 | 8 |
| Would they like the cluster to continue (if survived) / would they have liked the cluster to continue (if didn't survive) | 91.3 | 21 | 100 | 33 |
| Who took the decision? | | | | |
| One member took the initiative | 0 | 0 | 3 | 1 |
| All members discussed together and decided not to continue | 69.6 | 16 | 97 | 32 |
| No clear decision to end coordination, just stopped after the project ended | 30.4 | 7 | - | - |
| Cluster has regular meetings | - | - | 70 | 23 |
| Operates a bank account | - | - | 91 | 30 |

**Source:** Authors' calculations using data from IFPRI's Clustering for Global Market Access in Bangladesh: Follow-up Phone Survey, 2025.

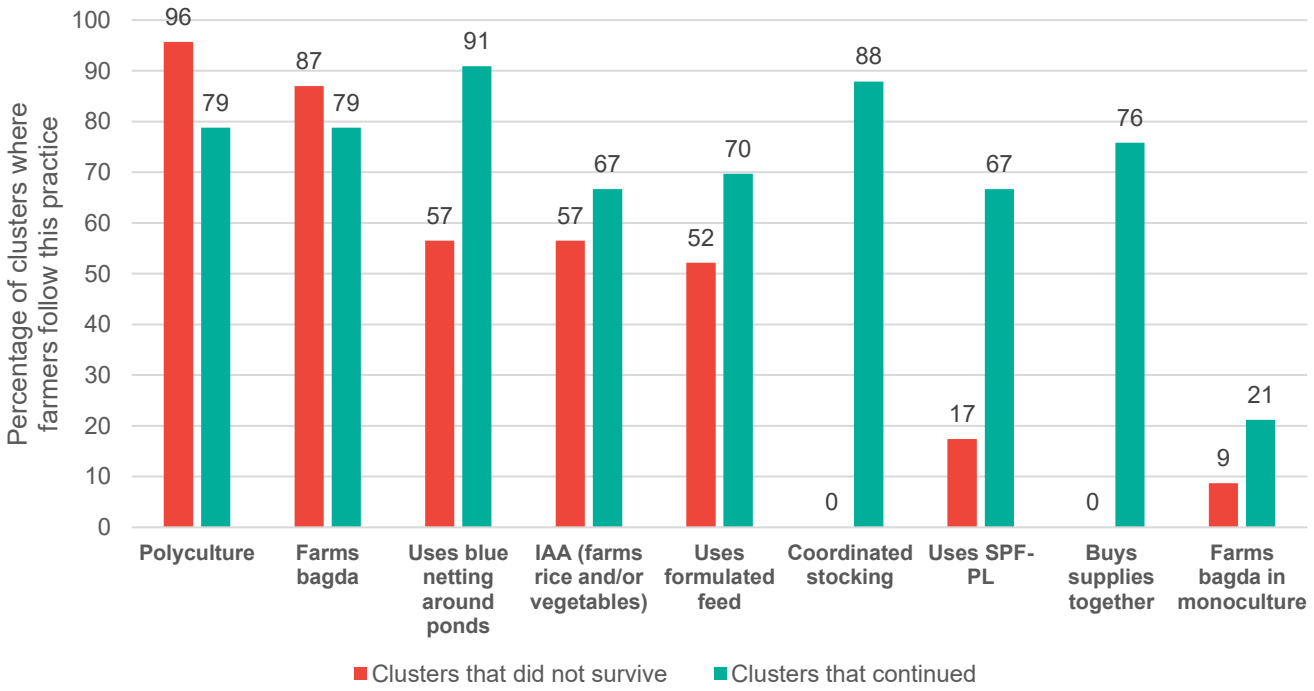
**Note:** "-" = not applicable.

### *Which practices did farmers continue?*

As described already, the cluster organizers had promoted several practices that would increase the productivity of shrimp farms. To what extent did the practices learnt or followed as part of the cluster intervention continue beyond the program? We traced a set of recommended practices via our phone survey. These include species choice (i.e. *bagda*) and diversity. We documented the prevalence of monoculture of *bagda* and avoiding cultivation of rice and vegetables in and around the pond, i.e. integrated aquaculture-agriculture (IAA), respectively, both of which were promoted as part of the cluster program. Within shrimp farming, use of SPF-PL, blue netting to secure the perimeters and use of formulated feed were promoted. Most of all, cluster members were urged to synchronize stocking and harvest to ensure the ability to aggregate harvests for synchronized sale.

Figure 2 depicts the share of farmers within clusters that continued and those that did not, arranged in ascending order of the combined number of clusters that followed a specific practice. A striking feature is the resistance to monoculture *bagda* farming and a strong preference for polyculture of different aquatic species, including *bagda*, and a preference for growing rice and vegetables, i.e. IAA. This reveals a strong preference for the traditional system of polyculture and IAA.

**Figure 2:** Which practices did shrimp farmers continue?




**Source:** Authors' calculations using data from IFPRI's Clustering for Global Market Access in Bangladesh: Follow-up Phone Survey, 2025.

**Note:** IAA = Integrated aquaculture-agriculture.

Beyond this, three patterns are noteworthy.

First, there are clear differences across clusters that survived and those that did not across most of the practices. Clusters that did not continue exhibit a stronger reversion to more traditional production systems, reverting to polyculture and IAA; they are less likely to grow *bagda* in monoculture, less likely to use formulated feed, blue netting or SPF-PL. The clusters that did not survive do not synchronize either stocking or harvest.

Second, even among clusters that apparently did not function as a cluster anymore, cluster members reported following several cluster practices, apparently happy to pursue things they could do individually. Use of blue netting to fence the ponds and use of formulated feed are examples of such practices. The continued use of SPF-PL is, however, more limited.

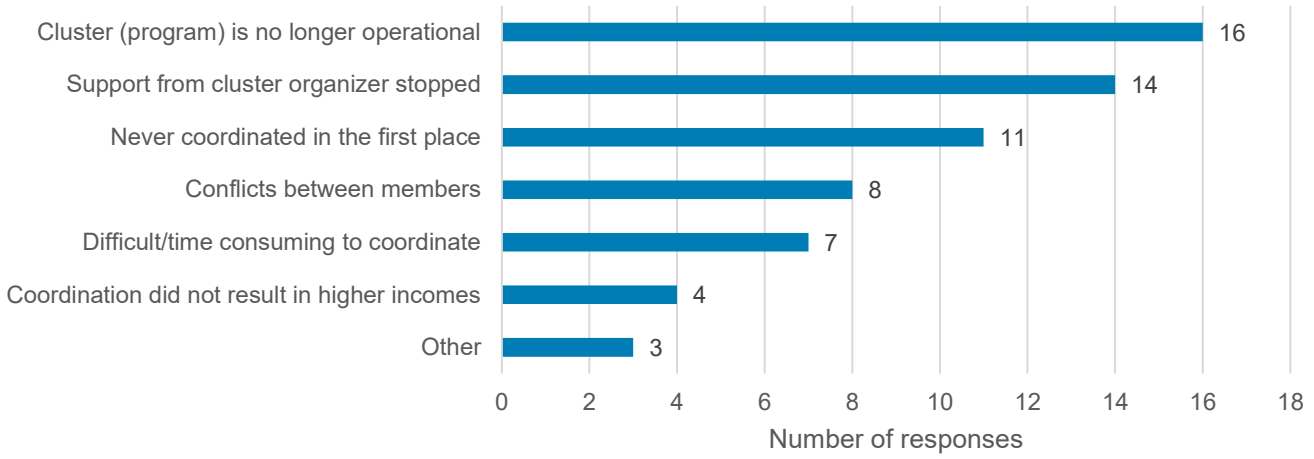
Third, and conversely, among clusters that continue, not all practices persisted. Not only were *bagda* monoculture and exclusive shrimp farming not preferred, only a few practices such as blue netting were practiced by almost all the clusters.

### *What drives cluster continuance?*

As part of the phone survey, we asked respondents about the reason for the decision to continue as a cluster or not. Most of the clusters that continue pointed to higher yields and profits; they also stated that sharing information on markets and prices was very useful and buying inputs in a coordinated way was easier.

In contrast, in clusters that did not continue, the stated reason was not that the outcomes, such as yield or net profits, were poor. Rather, the main reasons appear to be on account of two issues – the absence of an external force that coordinated and supported cluster activities and the absence of internal social cohesion issues (Figure 3). While just four of the 23 clusters that did not survive noted that coordination did not result in higher incomes, the two main groups of reasons were (a) the withdrawal of the program and (b) that members of these clusters never coordinated well to start with, including facing challenges in coordinating or due to conflicts among members. For example, some respondents from these clusters noted that former cluster members prefer to work independently now that the program has ended; others noted that differences among members were too many to start with. It would seem therefore that these clusters were never clusters in the real sense and were held together by program staff.

**Figure 3:** Why did the cluster not continue?




**Source:** Authors' calculations using data from IFPRI's Clustering for Global Market Access in Bangladesh: Follow-up Phone Survey, 2025.

### *Insights from the case studies*

Our ten case studies went further to glean insights into shared features of clusters that survive and those that did not. We group these into three broad categories: (1) program readiness, (2) implementation quality, and (3) internal cohesion.

As described already, the shrimp cluster involved cluster members committing to several specific practices including deepening the pond. Two constraints emerged here. First, since several members did not own the land and ponds they farmed and often leased them in for just a year or two, they were reluctant to invest money to deepen the ponds. Further, many of the cluster members did not have the financial capacity to undertake such deepening. This is even though at the time of joining the cluster they had expressed a willingness to do so. Some clusters therefore stumbled from the start. Another "requirement" of the project involved members to share land documents that established title to the shrimp ponds; many farmers, owners and lessees alike, balked at the idea of sharing these documents. Several clusters were therefore not prepared or ready to adhere to the prescriptions of the program but were part of the program anyway. This lack of readiness to adhere to the prescriptions of the program meant that these clusters never really took off in the way intended.

A second set of reasons pertain to implementation quality, a key concern in any attempt to organize or manage clusters. Cluster experiences varied widely. In some clusters, the staff were competent and committed, whether it was from the government department or the non-governmental organizations(s) that assumed implementation responsibilities. In some cases, however, the quality of implementation seemed wanting. One cluster member noted that whereas the staff from the fisheries department were very competent and knowledgeable, that staff that typically trained them on shrimp farming knew little, having had no experience themselves with shrimp farming and having worked on projects earlier that focused on growing vegetables. In still others, lackadaisical staff seemed to have apparently not been prompt or transparent in their financial dealings, leaving cluster members disillusioned, if not in despair.

A third set of factors was largely internal to the group of members forming the cluster. These constraints took different forms. While conflict and differences in how to work did not seem to be salient in

the ten case studies, a lack of cooperation and coordination in meeting the requirements of the program seemed to be their undoing. It was also clear that a strong leadership made a difference in enabling the group to connect and liaise with the Department of Fisheries and the program staff to address the group's needs. Where such leadership was missing or there were political or other differences and conflicts, the cluster seemed to struggle to thrive.

## Concluding remarks

This note aimed to distill insights from a research effort that tracked shrimp farming clusters following the end of a cluster intervention project. There are not many specific accounts of how agro-industrial clusters fare once the program to develop such clusters concludes. We know little, for example, on the rate of survival of clusters after the program ends. Existing evidence on interventions that seek to form agro-industrial clusters show practices or activities promoted as part of an organized cluster typically decline after the cluster organizer exists, though some practices and their consequent outcomes such as incomes and market linkages, can persist, especially where the responsibilities devolve on local actors or institutions.

Our study, based on a random sample of a fifth of all clusters in the program, suggested that 59% of the clusters survived after the program ended. This could be interpreted as a good outcome, given that more than half of the clusters; at the same time, considering that this outcome was measured immediately after the program concluded, it is unclear how long the others might last.

The study points to a few preliminary lessons. First, it seems that many of the clusters were predestined to fail, considering that many members were not prepared to follow the prescribed practices. Second, there is suggestive evidence that implementation quality was uneven and incentives for the frontline staff were not always well aligned to ensure the program's success. Third, group cohesion and leadership seemed to be key in overcoming some of the challenges of functioning as a cluster.

More research is ongoing to explore these further and identify the correlations of cluster survival. These preliminary results, however, already offer some insights. Given that not all shrimp farmers have the capacity to adopt the recommended practices, interventions are perhaps best tailored to suit the ability of the group so that the prescribed model is best implemented in a series of graduated steps. Relatedly, for best practices to continue beyond the program and achieve a more enduring transformation of production practices, perhaps programs should operate for a longer duration.

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