# The farmer as an agricultural extension agent in coastal Bangladesh

INITIATIVE ON Asian Mega-Deltas

Deepa Joshi, Anna Panagiotou and M. Wakilur Rahman

December 2024

# Key messages

- Coastal Bangladesh, with its unique geographic and climatic conditions, faces distinct agricultural challenges, now exacerbated by climate change.
- Providing agricultural extension services, the process of increasing farmers' awareness of, and access to relevant skills, research, knowledge, inputs, and technology, is one of the ways in which the country has tried to deal with those challenges.
- However, the process of agricultural extension is itself not without its challenges, including the availability of resources, connections, and collaboration between the agents involved, inclusion, and effectiveness.
- This study examines the process of agricultural extension on the ground from the perspective of its providers (extension agents) and its recipients (community members/farmers), based on interviews with, and stories shared by several members of both groups in Khulna District. This helps us highlight the underexplored importance of farmers' agency in supporting the effectiveness of the extension process.
- Our findings emphasize that a deliberate consideration of community members as active participants who can and do shape the process of extension, the creation of bottom-up information flows, and the reframing of extension as a grounded, ongoing process in policy can have a positive impact on both inclusion and effectiveness.

# Why focus on the agricultural extension process?

Agricultural extension services support and empower those engaged in agricultural production by helping them solve challenges and access the necessary information, skills, and technologies to enhance their livelihoods and well-being (Dragic et al. 2009; Christoplos 2010; Anaeto et al. 2012). Quality extension services enhance agricultural development by emphasizing the active engagement of recipients, and responsiveness to their real needs. Extension agents have a pivotal role in this process, fostering a collaborative approach between service providers and recipients to drive meaningful progress in the agricultural sector.

The agricultural extension system in Bangladesh has evolved from purely public services to a more broad-ranging framework that includes private, non-governmental, and community-based organizations. Coastal Bangladesh, with its unique geographic and climatic conditions, faces distinct agricultural challenges such as salinity, scarcity of surface water, and waterlogging. Despite significant policy support and government commitment, agricultural extension services are not equally accessible to all. In addition, extension services are increasingly been driven by isolated project funding rather than by sectoral (public) investments. It is often argued that the adoption of new technologies and agricultural innovations tends to be low among smallholder farmers (Alam et al. 2024), women farmers in particular (Rashid et al. 2018; Medendorp et al. 2022). Our study shows that multiple factors can lead to the exclusion of specific community groups from accessing agricultural extension services and interventions.

Among smallholder farmers, the systemic, structural barriers adversely impacting productivity in, and incomes from agriculture include intragenerational declines in average plot sizes and the distress sale of land or livestock largely due to increasing climate impacts. They also result in increasingly unequal competition for water and related resources. Poor productivity and low profitability in smallholder agri-food systems-based livelihoods results in the seasonal migration of mostly adult men as a coping strategy, especially in the climate-impacted southern coastal regions (Chowdhury et al. 2022; Lam et al. 2022). However, a key finding of this study is that there is a mismatch between how extension workers provide information and how community members access it (Rahman et al. 2024). Building on this insight, through story collection (Figure 1), this policy brief aims to identify the barriers to inclusive extension services and propose actionable recommendations to enhance the inclusivity and effectiveness of agricultural extension services in coastal Bangladesh.

**Figure 1. An enumerator facilitating story-sharing by a community member in Batiaghata Upazila, Khulna District (photo: M. Wakilur Rahman).**

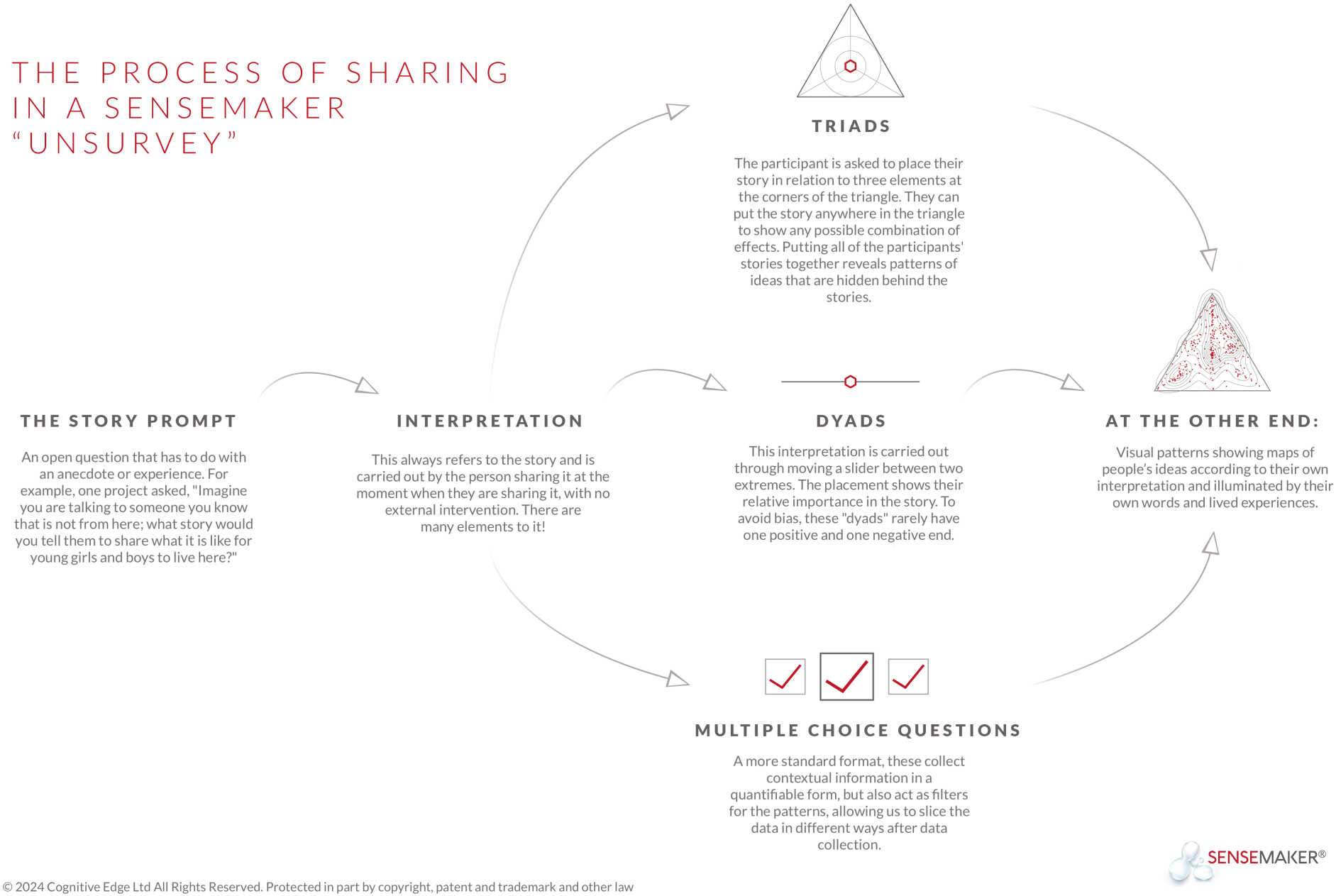
# Research methodology

To collect first-hand experiences from community members and extension workers, we used a digital ethnographic tool and platform called SenseMaker. It is designed to capture individual, embodied experiences, attitudes, and perceptions, combining relatively large volumes of data with qualitative stories and allowing participants to interpret their stories (Joshi et al. 2023). This is done through the design of a 'signification framework' that captures contextual, embodied experiences from respondents and allows them to share what the experiences mean to them, revealing attitudes in the process.

The SenseMaker tool allows us to approach complex questions, where context is key and where linear relationships between cause and effect cannot be assumed. Linear assumptions are avoided by capturing multiple interacting factors, most of which have to do with lived experiences, values, beliefs, and attitudes (van der Merwe et al. 2019). This process enables insights into unique personal experiences, experiences of agency or vulnerability, and how the respondents perceive challenges, risks, and opportunities in their everyday lives (Joshi et al. 2023).

Using this method, we collected stories from 537 community members in Polder 34/2 of Batiaghata Upazila, Khulna District, and 54 local agricultural extension actors in Batiaghata Upazila and more broadly Khulna District. First, we recorded each participant's story and then supported them in using the 'signification framework' to make sense of their stories related to extension services from their own perspectives. The quantitative output of this process of sense-making, outlined in Figure 2, as well as the stories themselves, make up the material presented in this policy brief.

**Figure 2. The process of story-sharing and self-interpretation using the SenseMaker tool.**
*Note: It is called an 'unsurvey' because it looks like a survey in some ways but has different characteristics and intentions.*

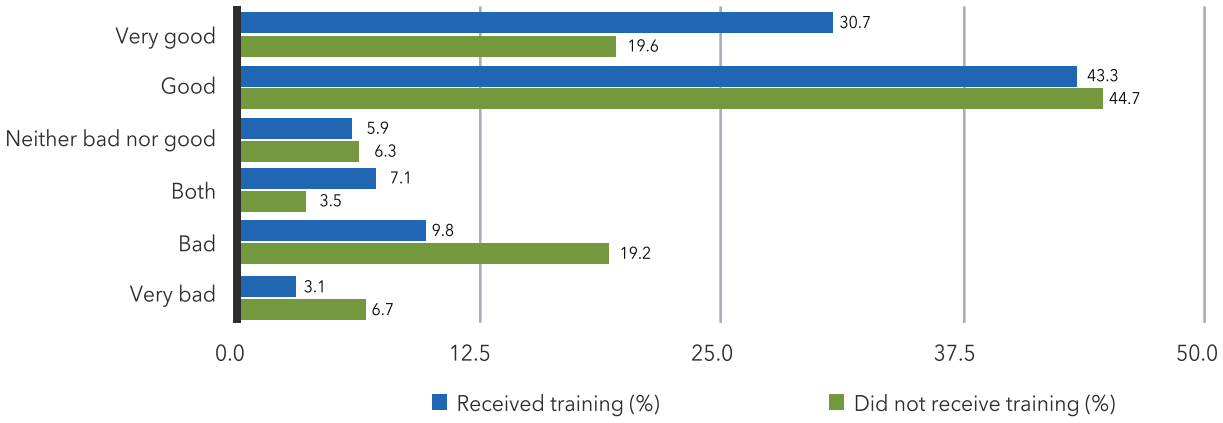


# Key findings

### 1. Both the benefits of, and the exclusions from agricultural extension training suggest the potential benefits of widening access to formal extension know-how

As Figure 3 indicates, community members who received formal agricultural extension training shared more very positive stories compared to those who did not (roughly 31 percent compared to 20 percent) and fewer negative (roughly 10% compared to 19%) and very negative ones. Although one should be cautious about drawing a direct causal link between such training and the more positive emotional tone of experiences reported, we can at least conclude that training is part of a cluster of factors and influences that lead to more positive stories emerging in the practice of agriculture, and as such has a role to play. Because it has a role to play, it is important to consider how it is currently affected by exclusions and limitations; both our data and other research (Medendorp et al. 2022; Adnan et al. 2023) suggest that formal agricultural extension is available mostly to landowning farmers and to men – in some cases because it intentionally targets them, and in others because the processes through which these services are offered make it more accessible to farmers with more resources, voice, and visibility.

**Figure 3. Percentages of positive and negative stories shared by community members who did or did not receive formal agricultural extension training.**




Figures 4 and 5 indicate how women, landless/tenant farmers, and other marginalized community members are impacted by the exclusionary nature of extension training. The landless tend to be mostly excluded from these trainings (Figure 4); however, because they are still farmers (as tenants), they rely on observing what other farmers are practicing and draw lessons and inspiration from that. However, they often end up with more negative stories (35 percent). For women (Figure 5), training in a public space is often limited due to patriarchal social norms regarding women's mobility. This explains why they associate direct access to an agricultural officer with more positive stories (about 18%). Similarly, like landless farmers, women also rely on trying to acquire knowledge by simply observing others. This is unfortunately associated with more negative than positive stories. The narrative in Box 1 illustrates the difference between having access to consistent information and support and trying to figure out things on one's own.

Focus group discussion with male farmers from Batiaghata, Bangladesh (*photo*: M. Wakilur Rahman).

**Figure 4. Percentages of positive and negative stories shared by community members who did or did not receive formal agricultural extension training.**

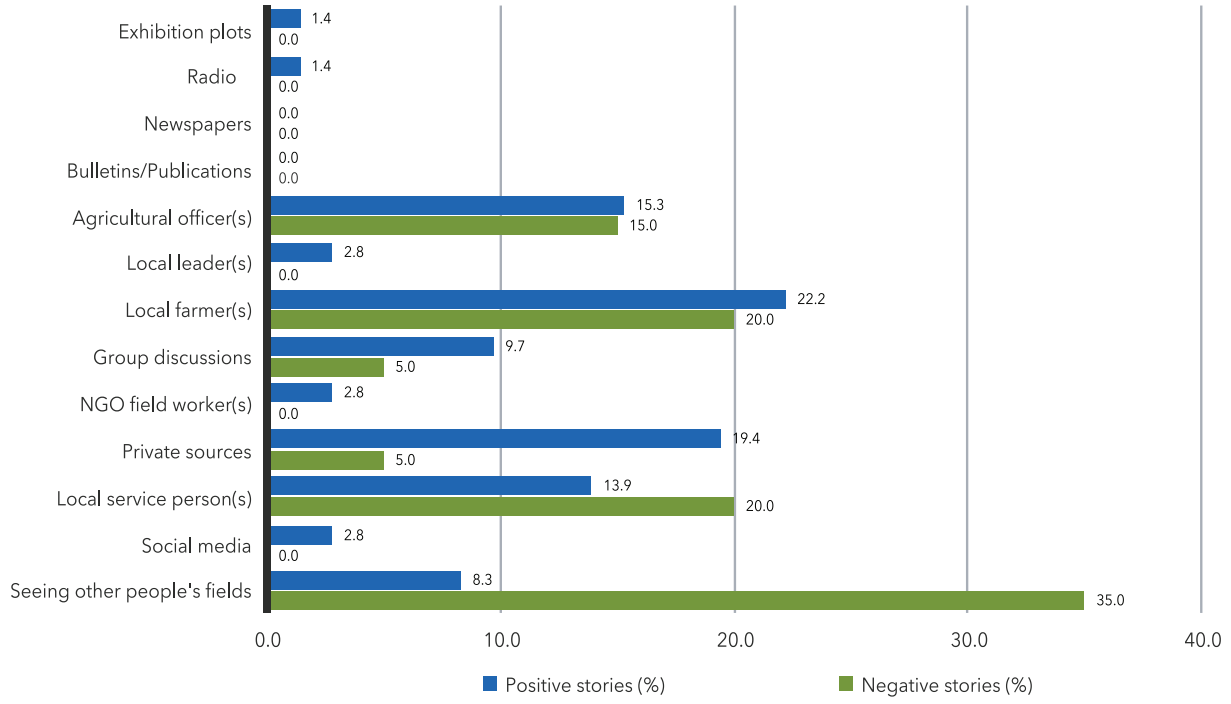
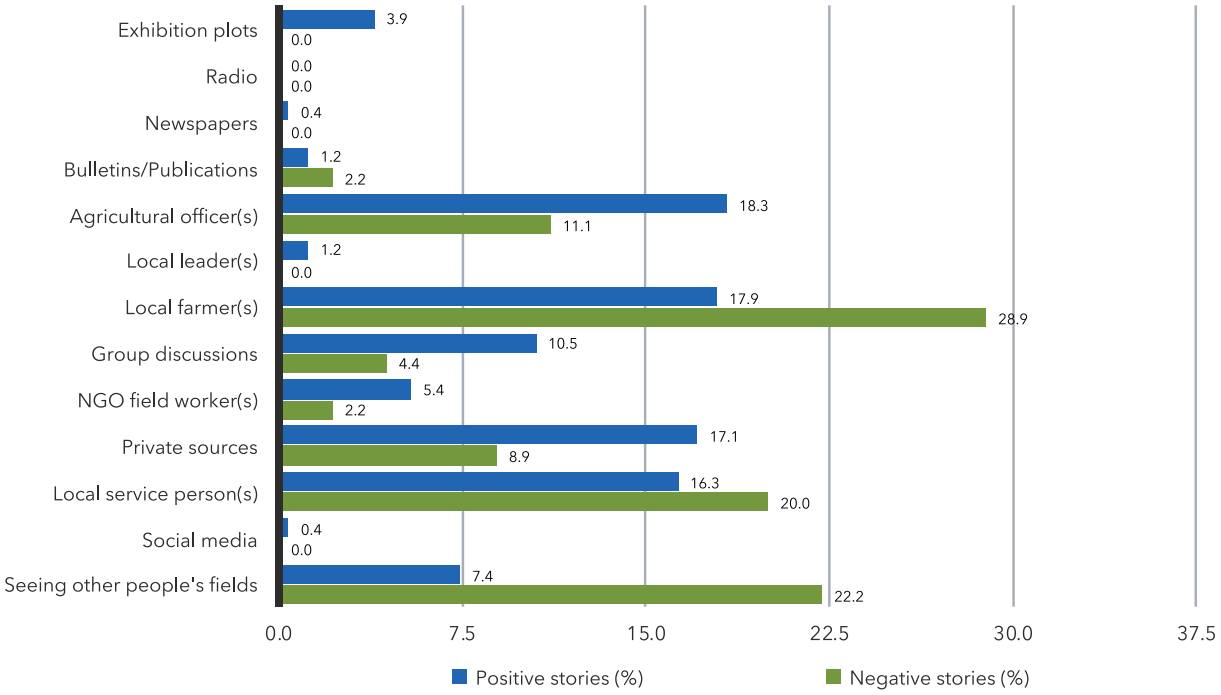



**Figure 5. How women received information in the stories they shared, and whether they experienced the story as positive or negative.**



### Box 1. The need for consistent agricultural extension services support.

I currently cultivate sesame, lentils, and sunflower. I started cultivating sunflower on the advice of government agricultural officials two years ago. They provided me with seeds, fertilizers, and pesticides free of cost. With their assistance, I have obtained good yields from sunflower cultivation. Our oil needs are fulfilled throughout the year with this sunflower oil. So, we do not have to buy oil from the market. That is why I have cultivated sunflower this year as well. I haven't achieved results yet, but I hope to get good yields.

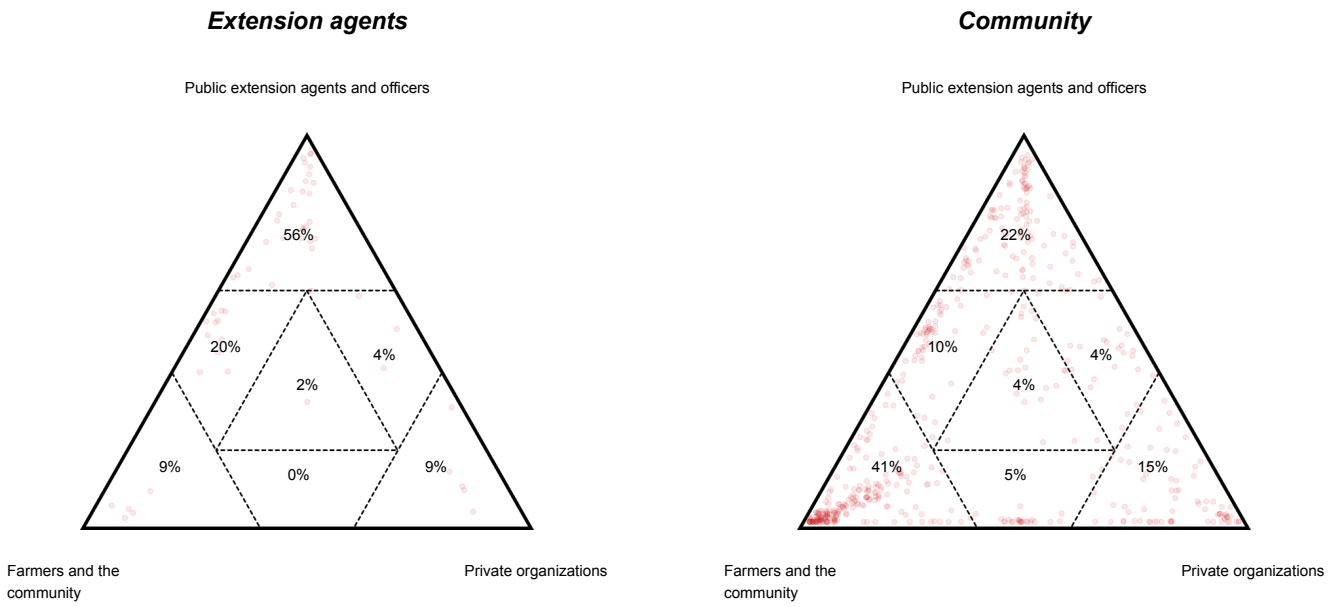
Last year, during the summer, I attempted to cultivate boro rice on my own initiative. However, the yield was not good at all. My crops were destroyed by pests and due to insufficient supply of freshwater. I tried using pesticides, as recommended by people, but it did not work. During rice planting, I got no intelligent advice from anyone. We did not understand many things and did not get results. That is why I did not cultivate boro rice this year.

– As told by a woman tenant farmer

## 2. Farmers are active and willing extension agents themselves, but they are not always recognized for this

The stories and data shared confirm again and again that farmers are, and see themselves as active agents of agricultural extension, despite not being formal extension agents. This strength and commitment, if harnessed and supported, can revolutionize agricultural extension policy, and address the resource/financial challenges currently impacting the sector. This becomes apparent in how they make sense of their own stories (see Figure 6). The triangular graphs (triads) were offered to participants to allow them to self-interpret their stories. They did that by showing where it fit in relation to the three corners (see Figure 2 for the process). The visualization aggregates all stories. This combination can then be sliced to reveal particular perspectives, like in Figure 6. In Figure 6, we see that farmers/community members, when asked "Who worked to create change in your story?" see themselves as the most active agents in the greatest share of stories – 41 percent. Extension agents, on the other hand, only acknowledge the agency and participation of community members in 9 percent of the stories.

**Figure 6. How extension workers (left, n = 54) and community members (right, n = 530) assessed who worked to create change in the experience they shared.**



The story shared in Box 2 provides context to what that active exercise of agency looks like: the farmers, working to improve their yields and circumstances, actively seeking out information from multiple sources, essentially reaching out to any resources available to them. The story also shows how they will enthusiastically apply public extension policy made available through a specific project, supplement this support with other sources or resources, and apply these in situations in which public extension services are not available. This confirms two aspects that have major importance for policy: one, extension service agents must recognize and capitalize on the active agency of farmers (something that Figure 6 suggests is not in place yet), and two, that farmers themselves have the capacity to act as the nexus where multiple sources of extension, public and private, meet. The latter applies especially in the transfer of extension know-how to those excluded from formal services and training.

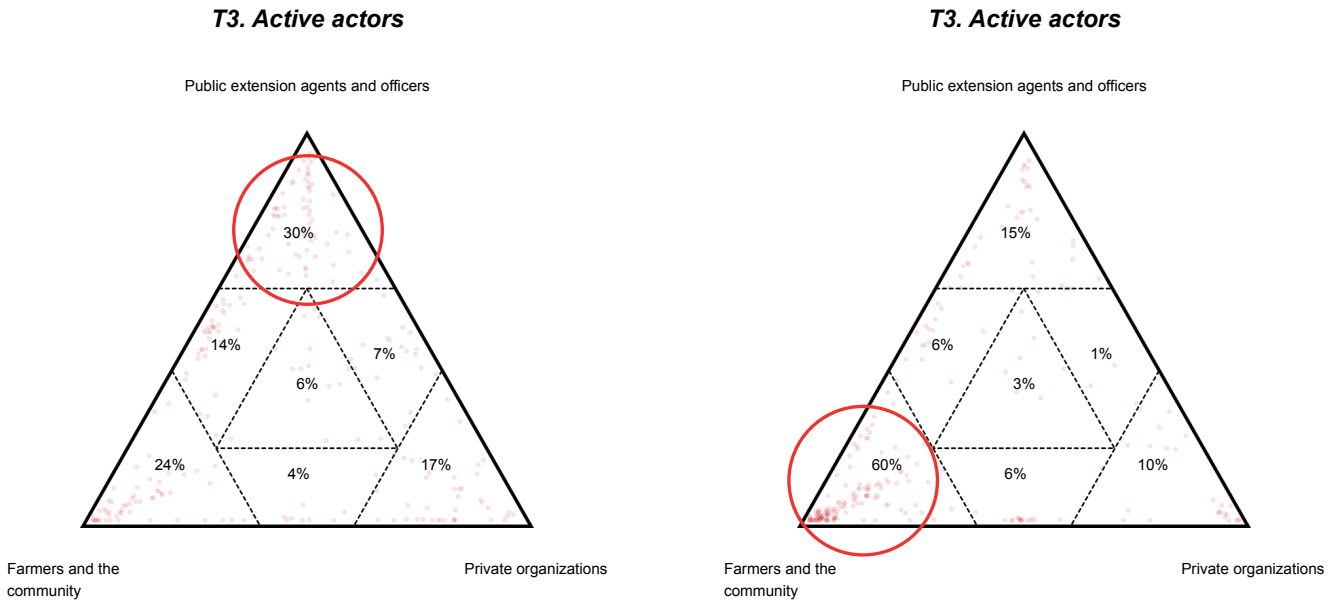
Interestingly, the data shown in Figure 7 suggest that the less support they have, the more farmers feel they have to take action themselves; farmers who did not receive training view themselves exclusively as active agents in 60 percent of the stories, while those who did get trained 'surrender' some of that agency to extension agents (30 percent). This has two further implications for policy: on the one hand, it confirms that attempts to create change in agriculture will go on, with or without the intervention and support of extension services. The other is that awareness of the careful balance between supporting farmers, but not over-directing them, is always important.

### Box 2. Farmers seeking out multiple sources of information.

In Botiaghata Upazila, there are farmers who cultivate various types of vegetables like lady's-finger. After observing their cultivation, I wanted to do the same and obtained some information from them. First, I prepared the land, planted the seeds, leveled the land, and applied fertilizer. When I encountered any problems, I would seek advice from the medicine dealer. When the CIP project arrived, the agricultural officer [anonymized] also provided farming-related information and motivated me. The project workers also offered significant assistance. The cost of cultivating lady's-finger is not too high, and with proper care, one can achieve higher yields. I cultivated it on a small plot of land, but it requires ample water for irrigation. The cultivation cost was around BDT 5,000–6,000 (USD 50), and I sold the lady's-finger for about BDT 25,000 (USD 210).

– As told by a male tenant farmer

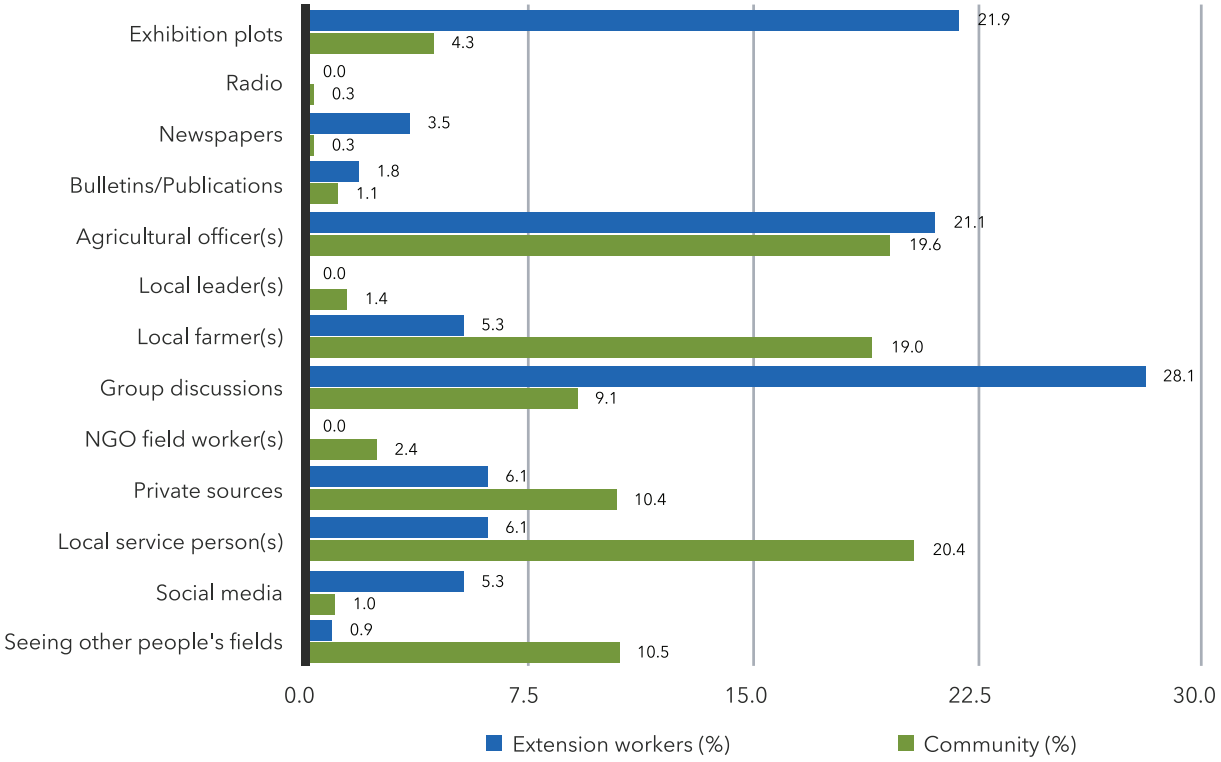
**Figure 7. How extension workers (left, n = 54) and community members (right, n = 530) assessed who worked to create change in the experience they shared.**



### 3. It is important to adjust the process of providing agricultural extension services to the lived experiences of farmers

Our data, illustrated in Figure 8, show the mismatch between how extension agents (in blue) say they provided information and how farmers (in green) say that they received information. These discrepancies suggest that extension agents might be, on the one hand, overestimating the impacts of structured group discussions and exhibition plots, and on the other, underutilizing powerful existing information dissemination pathways, such as local service staff and peer-to-peer knowledge flows.

**Figure 8. How farmers say they received information versus how extension agents say they provided information in the stories they each shared.**




It is perhaps this overemphasis on formal training methods that lead extension agents, on being asked which elements had an impact in the story they shared, to place much more emphasis on tools and methods as affecting stories of change (28 percent compared to farmers' 10 percent; see Figure 9), and much less emphasis on support than community members do. This provides an additional line of evidence to support the need to meet farmers where they are. Finally, the stories in Box 3 illustrate more graphically what the data show; how farmers will pass information from peer to peer, as against the extension agents' emphasis on getting advice from 'reliable' sources.

#### Box 3. Different responses of a farmer and extension agent.

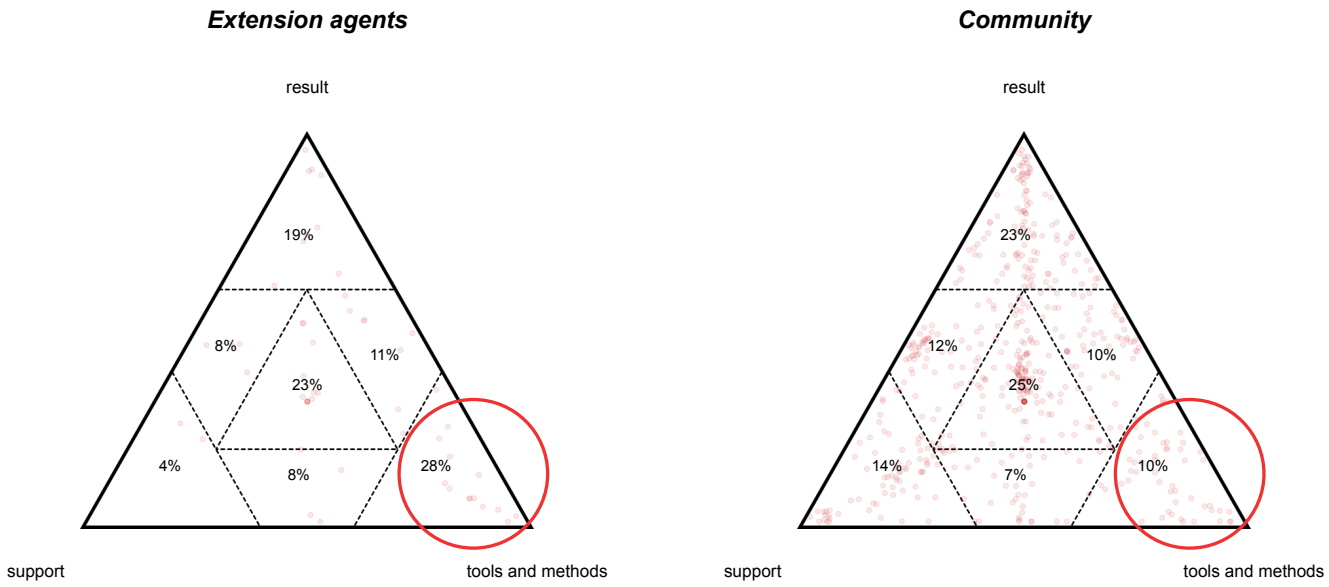
As I could not work myself, I sent some laborers for transplanting rice seedlings and they sowed them too deeply into the soil. Sowing seedlings deeply into soil makes the crop prone to white rot disease. Without taking advice from others, I applied some pesticides following a suggestion from my cousin. Then everything was good, and I got a good yield.

– A male tenant farmer

Once, a farmer with a diseased rice plant came to my office. Our guard told him that I was busy, but I heard it from inside. I wasn't busy at that time, so I called him in. He showed me the affected plant, and though the problem was evident, I told him I would come and inspect his field because without inspecting, I could not provide any advice. On visiting his field, I realized that his crop was affected by a fungal disease. The proper use of fungicide could cure it. But instead of consulting the right person, he sought advice from people around him and sometimes took advice from people running fertilizer and pesticide shops. As a consequence, he spent around BDT 2,500 [USD 20] on pesticides for his one-bigha land. Eventually, he did not achieve any success. His plants became significantly weaker. Later, after following my advice, he achieved some satisfactory results in the end.

– An extension agent

**Figure 9. How extension workers (left, n = 54) and community members (right, n = 530) assessed who worked to create change in the experience they shared.**




# Policy implications

- The role of farmers as active creators, instigators, and propagators of change suggests the need to alter how they are perceived and, potentially, the ways they are involved in agricultural extension services. Farmers are the key to ensuring that public extension services shape the agenda of agricultural extension towards greater coherence and that the multiple types of extension services work together.
- Farmers' continuous energy and activity for improvements in their agricultural practices means they must be actively consulted and included in the design of how and where extension services are delivered. This should especially apply to women and landless farmers who are currently less able to reap the benefits of agricultural extension services. Farmers can offer practical guidance on where impact can be achieved if actively included. Moreover, public extension services will be able to ensure to a greater degree that they are not leaving significant gaps behind that other agents (for example, commercial agents) will step in to fill. Very importantly, through that process, farmers themselves can be equipped to know and judge for themselves which information makes sense, and why. Offering farmers this type of meta-skill through greater inclusion would introduce greater coherence between different sources of advice and ensure that they are shielded from recommendations that have primarily commercial interests in mind.
- A more active inclusion of farmer advice in shaping how extension services are delivered will enable part of another policy recommendation: more bottom-up information flows that allow for local accommodation and adjustments and give decision-makers a more accurate picture of ground information. Farmers and community members are not the only people who need to be included in the process in substantive ways. Local agriculture officers also need to be considered not just as the disseminators of extension information and services but also as the providers of information to extension organizations on local issues and how they impact the effectiveness of intervention.
- Finally, roles with active involvement at the local scale, such as certain kinds of agricultural officers who work directly with communities, are also crucial for continuous engagement with agricultural practice; given that farmers' need for support is ongoing and changing, and not based on specific projects, the structure of extension service delivery needs to meet them where they are.

# References


Adnan, K.M.M.; Sarker, S.A.; Tama, R.A.Z.; Shan, T.B.; Datta, T.; Monshi, M.H.; …Akhi, K. 2023. Catastrophic risk perceptions and the analysis of risk attitudes of maize farming in Bangladesh. *Journal of Agriculture and Food Research* 11, Article 100471. https://doi.org/10.1016/j.jafr.2022.100471

Alam, M.J.; Sarma, P.K.; Begum, I.A.; Connor, J.; Crase, L.; Sayem, S.M.; McKenzie, A.M. 2024. Agricultural extension service, technology adoption, and production risk nexus: Evidence from Bangladesh. *Heliyon* 10(14), Article e34226. https://doi.org/10.1016/j.heliyon.2024.e34226

Anaeto, F.; Asiabaka, C.; Nnadi, F.; Ajaero, J.; Aja, O.; Ugwoke, F.; …Onweagba, A. 2012. The role of extension officers and extension services in the development of agriculture in Nigeria. *Wudpecker Journal of Agricultural Research* 1(6): 180–185. Available at https://repository.futo.edu.ng/handle/20.500.14562/1431 (accessed on October 1, 2024).

Chowdhury, M.A.; Hasan, M.K.; Ul Islam, S.L. 2022. Climate change adaptation in Bangladesh: Current practices, challenges and the way forward. *The Journal of Climate Change and Health* 6, Article 100108. http://dx.doi.org/10.1016/j.joclim.2021.100108

Christoplos, I. 2010. *Mobilizing the potential of rural and agricultural extension*. Rome: Food and Agricultural Organization of the United Nations. Available at https://openknowledge.fao.org/handle/20.500.14283/i1444e (accessed on October 1, 2024).

Dragic, Z.; Sreten, J.; Zoran, R. 2009. *The role of knowledge, innovation and human capital in multifunctional agriculture and territorial rural development*. Belgrade, Republic of Serbia: Institute of Agricultural Economics. Available at https://ideas.repec.org/a/ags/iepeoa/245136.html (accessed on October 1, 2024).

Joshi, D.; Anna, P.; Rahman, M.W. 2024. *Agricultural extension services in Bangladesh: Experiences of vulnerability, access, and benefits*. Innovation brief of IWMI, November 2024. Available at https://cgspace.cgiar.org/items/895bdabe-26bb-4dfa-b02e-13cabb59b1b6

Joshi, D.; Panagiotou, A.; Bisht, M.; Udalagama, U.; Schindler, A. 2023. Digital ethnography? Our experiences in the use of SenseMaker for understanding gendered climate vulnerabilities amongst marginalized agrarian communities. *Sustainability* 15(9), Article 7196. https://doi.org/10.3390/su15097196

Lam, Y.; Winch, P.J.; Nizame, F.A.; Broaddus, E.T.; Harun, M.G.D.; Surkan, P. 2022. Salinity and food security in southwest coastal Bangladesh: Impacts on household food production and strategies for adaptation. *Food Security* 14, 229–248. http://dx.doi.org/10.1007/s12571-021-01177-5

Medendorp, J.W.; Reeves, N.P.; Celi, V.G.; Harun-ar-Rashid, M.; Krupnik, T.J.; Lutomia, A.N.; …Bello-Bravo, J. 2022. Large-scale rollout of extension training in Bangladesh: Challenges and opportunities for gender-inclusive participation. *PLOS ONE* 17(7), Article e0270662. https://doi.org/10.1371/journal.pone.0270662 Y

Rashid, M.M.; Kamruzzaman, M.; Mustafa, E. 2018. Women participation in agricultural extension services in Bangladesh: Current status, prospects and challenges. *Bangladesh Journal of Extension Education* 29 (1&2): 93–107. Available at https://www.researchgate.net/publication/326291244_Women_Participation_in_Agricultural_Extension_Services_in_Bangladesh_Current_Status_Prospects_and_Challenges (accessed on October 1, 2024).

Van der Merwe, S.E.; Biggs, R.; Preiser, R.; Cunningham, C.; Snowden, D.J.; O'Brien, K.; Goh, Z. 2019. Making sense of complexity: Using SenseMaker as a research tool. *Systems* 7(2), Article 25. https://doi.org/10.3390/systems7020025

**Authors**
**Deepa Joshi**, International Water Management Institute (IWMI), Colombo, Sri Lanka *(deepa.joshi@cgiar.org)*
**Anna Panagiotou**, The Cynefin Company, Conwy, U.K. *(anna.panagiotou@thecynefin.co)*
**M. Wakilur Rahman**, Department of Rural Sociology, Bangladesh Agricultural University, Mymensingh, Bangladesh *(wakilur.rahman@bau.edu.bd)*

**Acknowledgements**
This work was carried out under the CGIAR Initiative on Asian Mega-Deltas, which is grateful for the support of CGIAR Trust Fund contributors *(www.cgiar.org/funders)*. The authors gratefully acknowledge the stakeholders in Bangladesh and India who provided time and inputs into this study.

**CGIAR Initiative on Asian Mega-Deltas**
The CGIAR Initiative on Asian Mega-Deltas aims to create resilient, inclusive, and productive deltas that maintain socio-ecological integrity, adapt to climatic and other stressors, and support human prosperity and well-being by removing systemic barriers to the scaling of transformative technologies and practices at the community, national, and regional levels. *https://www.cgiar.org/initiative/asian-mega-deltas/*

**Citation:** Joshi, D.; Panagiotou, A.; Rahman, M. W. 2024. *The farmer as an agricultural extension agent in coastal Bangladesh.* Colombo, Sri Lanka: International Water Management Institute (IWMI). CGIAR Initiative on Asian Mega-Deltas. 12p.

**Cover photo:** Focus group discussion with female farmers from Batiaghata, Bangladesh, on December 16, 2023 (photo: M. Wakilur Rahman)

**Disclaimer:** This publication has been prepared as an output of the CGIAR Initiative on Asian Mega-Deltas and has not been independently peer-reviewed. Responsibility for opinions expressed, and any possible errors lies with the authors and not the institutions involved.

CGIAR is a global research partnership for a food-secure future. CGIAR science is dedicated to transforming food, land, and water systems in a climate crisis. Its research is carried out by 13 CGIAR Centers/Alliances in close collaboration with hundreds of partners, including national and regional research institutes, civil society organizations, academia, development organizations and the private sector. *www.cgiar.org*

**We would like to thank all funders who support this research through their contributions to the CGIAR Trust Fund: *www.cgiar.org/funders*.**

To learn more about this Initiative, please visit *www.cgiar.org/initiative/asian-mega-deltas*.

To learn more about this and other Initiatives in the CGIAR Research Portfolio, please visit *www.cgiar.org/cgiar-portfolio*



IWMI
International Water Management Institute

CGIAR INITIATIVE ON Asian Mega-Deltas