

Women's voice and agency in “organized” vegetable clusters

The Agriculture Production Cluster (APC) program in Odisha, India

Sudha Narayanan, Ben Belton, Bhumika Mishra, Md Sadat Anowar

Key highlights

- ▶ **The Agricultural Production Cluster (APC) program is a targeted approach to assist women from marginalized communities, especially in tribal areas, diversify into high value agriculture.** The goal is to double farmer incomes through vegetable production and animal rearing.
- ▶ **These organized clusters are inclusive. Beneficiaries tend to be poorer on average and from marginalized communities.** Independent and cluster vegetable growers are otherwise similar across a range of household and socio-demographic characteristics.
- ▶ **Women who belong to these APCs value the training they received in vegetable cultivation and new methods they learned, such as trellising and grafting.** They value the ability to receive inputs more easily. They report being able to expand vegetable production and now have traders pick up produce from the village rather than having to sell it themselves in local markets.
- ▶ **The APC program has been instrumental in getting women recognition as farmers. It has also facilitated access to government assistance for machinery, equipment and other subsidies.**
- ▶ **Most women participate actively in the working of the producer group. They speak up at meetings, vote on matters, and even represent the group,** though the extent. Many women note that although they faced resistance within the household, the attitudes of their male spouses and other family members gradually shifted.
- ▶ **Most women would like to continue as part of the producer groups.** Policy questions remain around the potential viability of these groups beyond the intervention period. We recommend that since cluster performance is variable. A useful next step would be to offer accelerator programs for

clusters that are "embryonic" and have strong growth prospects, and a more basic program focused on continued first-order support for "survival clusters."

Introduction

A key policy tool for inclusive agrifood system transformation has been organizing women farmers into collectives. This is especially important for diversifying production into high-value sectors such as horticulture and livestock. Empirical evidence from around the world shows that some of these efforts can be transformative, but the impact is mixed and can involve tradeoffs (Malhotra et al. 2024; Quisumbing et al. 2021; Twyman et al. 2022). The extent to which programmatic interventions can enable inclusive and sustainable value chain participation thus depends on specific design principles. These includes the selection of commodities, bundling of interventions that tackle multiple constraints simultaneously, the presence of committed staff and champions for effective implementation, and a pathway to institutionalize these interventions (Narayanan et al. 2024, for example). In contrast to clusters that develop spontaneously, where incentives and supportive institutions may be present already and may have spawned these clusters to start with, the viability of organized clusters depends crucially on these inputs.

In this note, we bring together qualitative and quantitative data from a larger research effort (See Project Note 1) to spotlight the experiences of women farmers in organized clusters in the Indian state of Odisha. We focus on the Agriculture Production Cluster Program (APC). The goals of our research are to understand how organized clusters can foster and support diversification into vegetable cultivation. A second goal is to understand women's experience in vegetable production within these clusters. A third goal is to reflect on the broader design and implementation of the APC program and its sustainability in a context where many cluster interventions are known to implode or fade after the program ends (Belton et al. 2025; Narayanan et al. 2025).

Organized vegetable clusters in Odisha: The APC program

On November 6, 2018, the Government of Odisha launched a special program called the Promotion of Agriculture Production Clusters (APCs). The initial focus was to "trigger growth" in the farm sector by making farming aspirational. The goal was to double the income of farmers in marginalized regions that were predominantly populated by indigenous communities or *adivasis*. The project focused on women farmers who were part of Self-Help Groups (SHGs). These SHGs had already emerged as a key rural institution for promoting savings and credit among women. Against the larger context of Odisha's dependence on vegetables from other states, this program aimed to contribute to Odisha's self-sufficiency in vegetables.

The APC program was built around a bundle of interventions. At its core, the program would: identify women farmers from SHGs; collaboratively identify 2-3 promising crops that were both marketable and suited to the agroclimatic conditions of the community; form producer groups; provide training to the women on production techniques; plan sowing, harvest, and marketing so they are synchronized for aggregation; and forge market linkages both upstream for inputs (including seeds, saplings, fertilizers, and chemicals) and downstream with traders. A key feature of the program was establishing a platform

for multiple government programs and funding streams to converge. This would enable access to government programs and benefits in a context where women tend to be excluded, and work towards institutionalizing these efforts into formal Farmer Producer Companies (FPCs).¹

Initially, the APC covered 40 blocks in 12 districts of the State, which were predominantly tribal. Subsequently, 33 and 27 more blocks were added to the project in a phased manner, bringing the total count of APC blocks to 100 covering 16 districts in 2021-22. Official figures show that as of 2023-24, 218,019 women farmers had been brought together into 1,753 producer groups, and 55 Farmer Producer Companies. Of these, 142,816 women farmers were growing vegetables, with the rest focusing on plantations, livestock, etc.² As per official accounts, the APC has been immensely successful and has led to an expansion of the area under vegetable cultivation among members. Our research is an independent effort to go beyond these numbers and gain a detailed understanding of women's experience as part of the APC.

Methods

We combine qualitative data from field visits in 2024-25 and a household survey of 99 APC members, as part of a larger survey of vegetable value chains conducted in December 2025, to understand the experience of women in these organized clusters (Figure 1).³

As part of the qualitative data collection, we visited APC clusters in four districts in Odisha—Anugul, Keonjhar, Koraput, and Mayurbhanj—between June 2024 and November 2025. We conducted interviews and focus group discussions (FGDs) with stakeholders, including women farmers who participated in these clusters. We conducted Key Informant Interviews (KIIs) with project managers, and implementing staff of civil society organizations (CSOs) involved in organizing these clusters. This enabled us to understand the implementation process and challenges.

The household survey of the 99 APC members was conducted in December 2025. The APC members we surveyed were identified during a house listing process across 154 villages. Of these 154 villages, 144 were randomly selected-vegetable growing villages (as per the local government), and 10 were randomly selected from a list of villages where the APC program was implemented but were not identified as a vegetable growing villages. From the listing process, we drew a random sample of households.⁴ We administered a special module to all those who reported that they farmed as part of a collective. Through this module, we documented women's experience in joining and participating in clusters. Many of our survey questions focused on aspects of voice and agency of women participants in these APCs, both in the cluster and within the household. The sample is small, in part because we did not stratify on this dimension. Indeed, in the entire list of households totaling 27,189, only 3.4% reported growing vegetables as part of a collective. Despite the small sample, the 99 members we interviewed

¹ In India, Farmer Producer Companies refer to companies owned exclusively by farmers who contribute equity and register themselves under the Companies Act, 1956. An FPC would be obliged to comply with the reporting requirements relating to financial earnings, taxation, etc. See Govil et al. (2020) for more details.

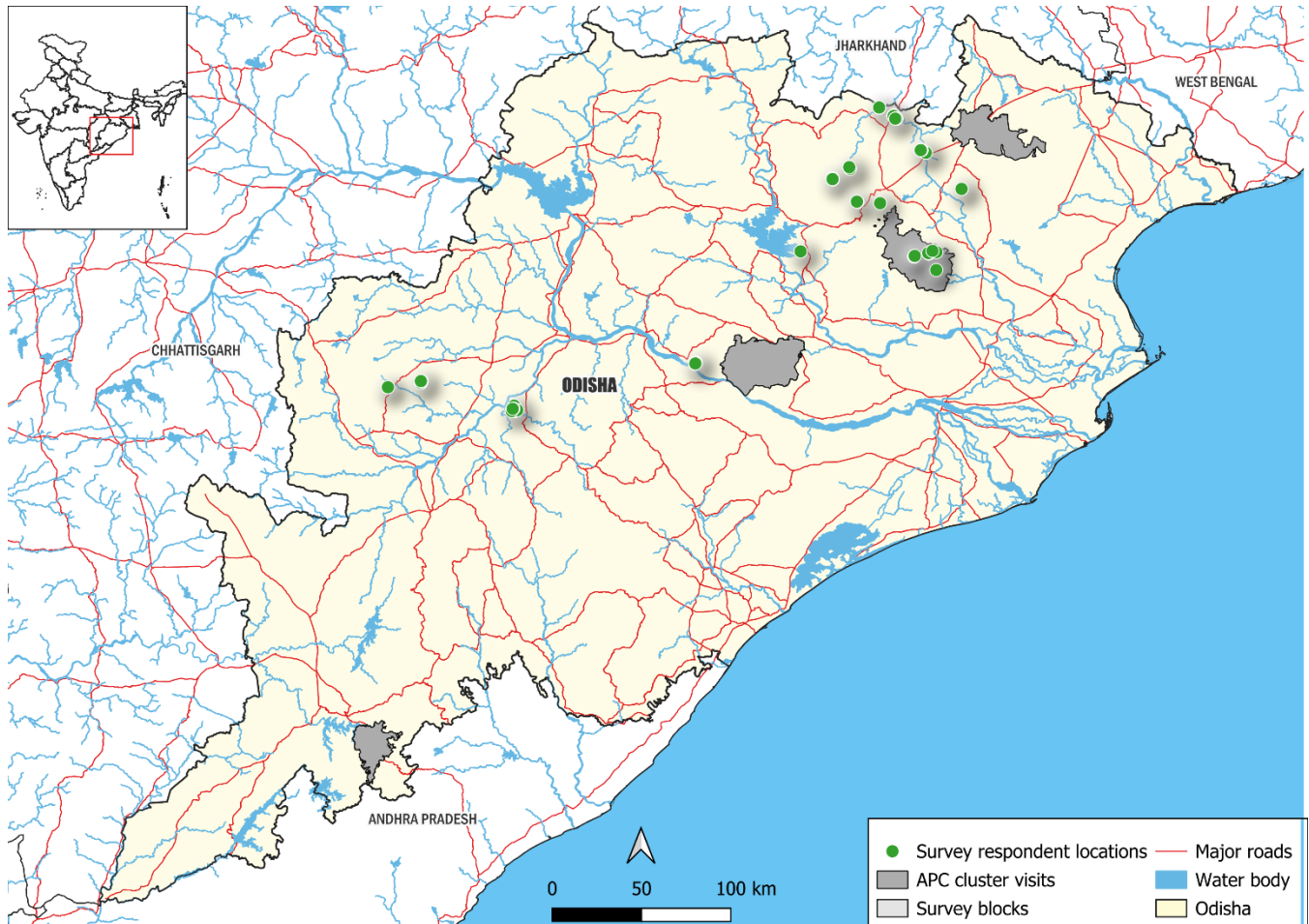
² See <https://apcodisha.in/dashboard.php>

³ This survey is part of a larger survey of stacked value chain actors in the vegetables sector in the Indian state of Odisha, conducted on 2025. As part of this study, we interviewed farmers, traders, input suppliers across 6 districts representing diverse agroclimatic zones (See Project Note 1, Belton et al. 2026).

⁴ In theory, APC member households only exist in villages that were part of the APC program. Three households in this sample belonged collectives in villages without the APC program and were likely part of collectives under other programs. We include them in our analysis. Further, of the APC members, 75 grew vegetables during the past year while the rest either did not grow vegetables this year or were part of animal rearing clusters. Although the INCATA Odisha project focuses on vegetables, we include other APC members in the analysis for the purpose of this note.

are spread across 19 villages and likely correspond to as many APCs. The data we collected therefore represents diverse experiences (Figure 1).

Figure 1: Study area and survey respondent locations



Source: Authors

Preliminary Findings

Implementation

The APC program was implemented through a network of CSOs whose intensive presence in the field enabled the mobilization of women farmers and the establishment of value chains. Even though the APC leveraged existing SHGs and the intended beneficiaries were familiar with the CSOs through earlier engagement, CSO staff noted that in the initial days, there was a considerable skepticism. One facilitator noted explained: “Starting with the SHGs, the first step was to form Producer Groups (PGs) for which a one-time subscription was charged Rs.200; we had to assure the women and their families that this would stay in the PG’s accounts. Many feared that this was a waste of money... even if they trusted us. Eventually, for the FPC the equity contribution is Rs.1000/member... we started small.”

Across clusters, the early stages involved bringing women together to collectively identify “winner” crops, with discussions around crop planning. In some clusters, the CSO ensured that they avoided dependence on a single crop by identifying 2-3 crops that women could choose from. In some clusters, the synchronized and collective nature meant that some farmers took up monocultures, whereas earlier they were growing multiple crops on the same farm. In others, farmers maintained diversity on their

farms. There was considerable variation across clusters. The CSO also played a crucial role in organizing inputs, negotiating with input dealers or procuring inputs at wholesale rates from large fertilizer co-operatives, apart from securing government assistance to enable vegetable cultivation. The final part of the value chain formation activity was to establish market linkages. Here too, all the APCs established links with regular traders who committed to collecting the produce at the farm gate. The CSOs were therefore the fulcrum, and brought together multiple Government programs, funding streams and actors.

Are the APC clusters inclusive?

In some clusters, CSOs identified only women SHG members with some exposure to vegetables as beneficiaries. In others, those who expressed interest in vegetable cultivation were identified for the clusters. Across clusters, those without land were organized into groups to rear animals. One CSO staff member in Anugul district noted: "We tried to select only small farmers with one acre or so and tried to identify those with low incomes. This area is dominated by Other Backward Castes (OBCs) who have access to land. So, we focused on identifying the Scheduled Castes (SCs) and Scheduled Tribes (STs) in these areas for vegetable farming, and those without land for livestock."

Our survey confirms the inclusive nature of these organized clusters. Table 1 compares the profile of APC members with other vegetable farmers in our sample. Though APC members are far less likely to be from the SCs, they are far more likely to be from the STs, reflecting the early programmatic focus on tribal women. Although APC members had small land sizes of just 0.3 acres, comparable to non-APC vegetable farmers, they tend to have more land over which the household has sole control. They are far less likely to be leasing in land for cultivation. Importantly, APC members appear to be poorer. A higher proportion possess an Antyodaya card, which entitles them to additional in-kind rations, and a job card that makes them eligible to seek work under the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA). APC-member households do not differ from other households in education levels of the most educated member, whether the household has a short- or long-term migrant, or household size and composition.

Some other characteristics are noteworthy (Table 1) because they may reflect post-program outcomes. For example, APC farmers are more likely to be part of a group or collective, have a comparable share of land under vegetables, and are more likely to have a Kisan Credit Card (KCC, a credit card specially for farmers to enable easy access to crop loans). This is relevant since the APC program both actively organized producers into collectives and enabled access to KCCs.

APCs as a vehicle for transformation

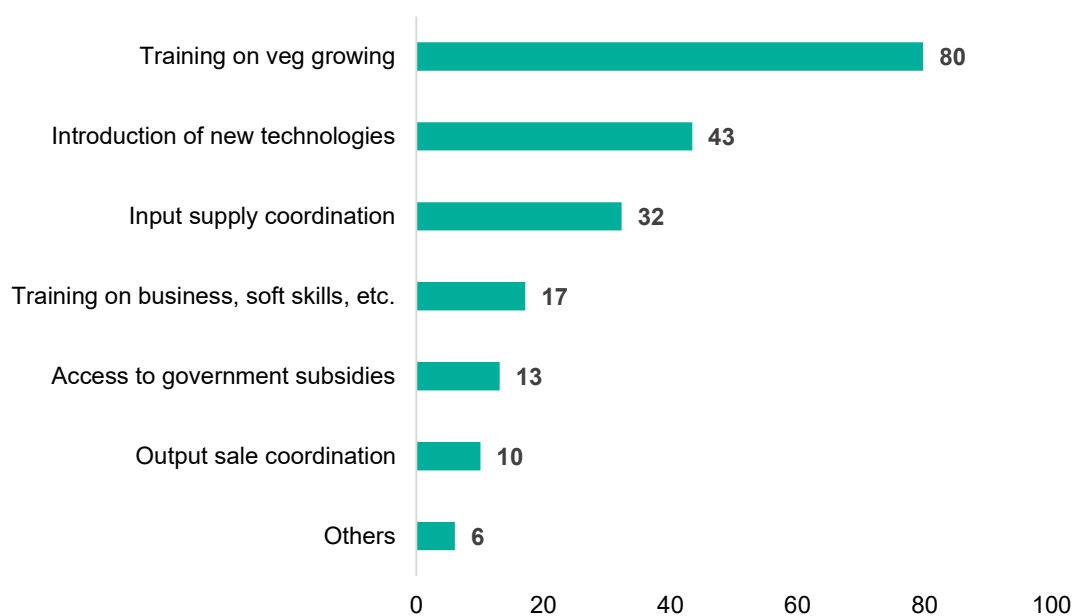
A key achievement in many APCs is that it enabled the official **recognition of women as farmers**. In a context where women could not access many government schemes because they needed to have land title to be eligible, under the APC program, significant effort was made to ensure that the local administration was able to sign approvals that established the link of the women to the title holder. This would ensure that women could access schemes that were meant for farmers. This required significant work

Table 1: A profile of APC members

Attribute	APC members (vegetable growers)	APC non-members (vegetable growers)	Difference
SC (%)	2.67	13.25	-10.58***
ST (%)	50.67	27.04	23.63***
Has sole decision making power over at least some land (%)	85.33	67.28	18.06***
Leases in any land (%)	16.00	29.71	-13.71***
Anyodaya card (%)	8.00	3.21	4.79**
Household has MGNREGA job card (%)	86.67	73.90	12.77**
Household member has KCC (%)	54.67	42.66	12.01**
Household member currently belongs to a group or collective (%)	92.00	77.71	14.29***
Sample size	75	2,023	

Source: INCATA Odisha Farmer Survey 2025. Notes: *** p<0.01, ** p<0.05, * p<0.10. Only variables that are statistically significantly different are presented here. The full set of results are available from the authors.

Figure 2: What did you receive as part of the APC program?



Source: INCATA Odisha Farmer Survey, 2025

and “bureaucratic literacy”. For example, the documentation requirements include multiple photocopies of the identity card, or *aadhar*, land documents, passport size pictures and so on, with multiple visits to administrative offices and long waits. The complex and time-consuming process were virtually impossible for women to navigate without support. Here, the CSO stepped in for crucial handholding.

This in turn enabled women to **access government schemes**. For example, the Odisha government had a wide range of schemes to support diversification, including the establishment of staking and trellising, irrigation, and so on. One project staff member explained to us: “Traditionally, staking for growing vegetables was typically done using bamboo poles, but now with the aid of a government subsidy, the women have been able to install concrete pillars that need not be replaced.” Other subsidies include drip irrigation, wells, small implements, and machinery, etc. Importantly, KCC access has become available to the women facilitating access to crop loans with the opportunity for interest subsidies upon prompt repayment.

A third aspect seems to be **the introduction of new technologies**. Both the beneficiaries themselves and the CSOs observed that a critical component of the APC was training women in the latest available technologies. Several examples that were evident across APCs. The first is trellising for vegetable cultivation. Until recently, most farmers were using staking, and trellising was less common. Indeed, in at least one area, trellising seems to have been introduced under the APC, with non-APC member farmers adopting this practice after observing its use on APC members farms. Mulching was also introduced, though not universally adopted. A third technology introduced is the use of grafted saplings (typically of gourd or eggplant grafted with tomato). CSO staff from the APCs were sent for training in Chhattisgarh; they in turn imparted what they had learned to members of the cluster. The grafted seedlings reportedly resulted in high yields and very good quality vegetables. In one cluster of about 200 acres, only 12 acres were under mulching, while 30 acres had some grafted variety or another. One women APC member explained: “Things that have changed since starting the project in terms of technology include our seedling preparation, use of good quality seed, taking cuttings, planting with the correct spacing, using trellises, and so on... These are all things that I learned through the producer group.” Another added: “We’ve also learned line planting for paddy by direct seeding. Before, paddy was broadcast by us”. The CSOs have also sought to introduce regenerative agriculture techniques.

A fourth outcome is the capacity of the APC member farmer to **grow for the market**. Whether it is in crop selection or timing of sowing and harvest, and the sorting and packaging, APCs have learnt to upgrade and add value while also being able to negotiate rates with the trader. At the time of writing most APCs were selling to traditional vegetable traders. One APC cluster organizer in Mayurbhanj explained that they reached out to “progressive” traders willing to procure at the farmgate. Once the Producer Group had devolved into FPCs, it seemed that there was also a gradual formalization of transactions – transitioning to bank payments where cash was once the norm.

Most importantly, there is resounding evidence that the APCs have had a profound influence in improving **voice and agency of the women**.

We already noted that the CSOs enabled APC members to gain recognition as farmers. Although the women continued to rely on the CSOs to assist in any interface with government, according to one CSO staff member “Earlier (until a couple of years ago) they had to work a lot helping women get these documents together...it used to take multiple tries and several days. Now the women already know what to bring and are ready with the full dossier of documents and photos to enable this.” The women

are now able to navigate government process better and understand better what the various documents mean. “Before it used to take 2-3 days for each woman and many tries and interactions – now the women show up with the documentation, all ready”

The household survey reveals some remarkable insights into the position and role of the women beneficiaries of the APC. Note that the APC program was built on earlier investments in mobilizing and organizing women into SHGs for the purpose of savings and credit. It is likely therefore that many of the women were already beginning to exercise their voice and agency in some spheres of economic life. For instance, only 12% of the women joined the producer group (PG) because others asked them to – a majority (57%) joined out of their own accord with 31% joining after their SHG peers persuaded them. In most cases, joining involves a modest monetary contribution. It was not always the case that the family permitted the women to join the PG and 39% reported that they had to convince other household members to allow them to join. Indeed although 47% of the respondents noted that their family was supportive of their involvement in the APC, an equal share noted that the family simply tolerated their involvement.

As

Table 2 indicates, a healthy proportion of the women respondents attend meetings regularly or always, have ever exercised their vote on group decisions (with only a few saying things were not put to vote at all), have voiced their opinion on aspects of vegetable cultivation, have Although only 3% had ever held any position in the PG or PC, about 22% of them had represented their group in some for a, for example in meetings and discussions with buyers, suppliers, or government officials. Remarkably an overwhelming majority, 74% noted the proceeds from sales typically accrued to them and over 90% noted that they decided jointly or by themselves on how these proceeds were used. About 77% noted that after working as a cluster, their bargaining position with the trader had improved, though 22% felt that there was no change. Women generally felt that their voice counted within the cluster. In the rare occasion where there were challenges the women were able to raise issues with the SHG leadership to protest and discuss her discontents.

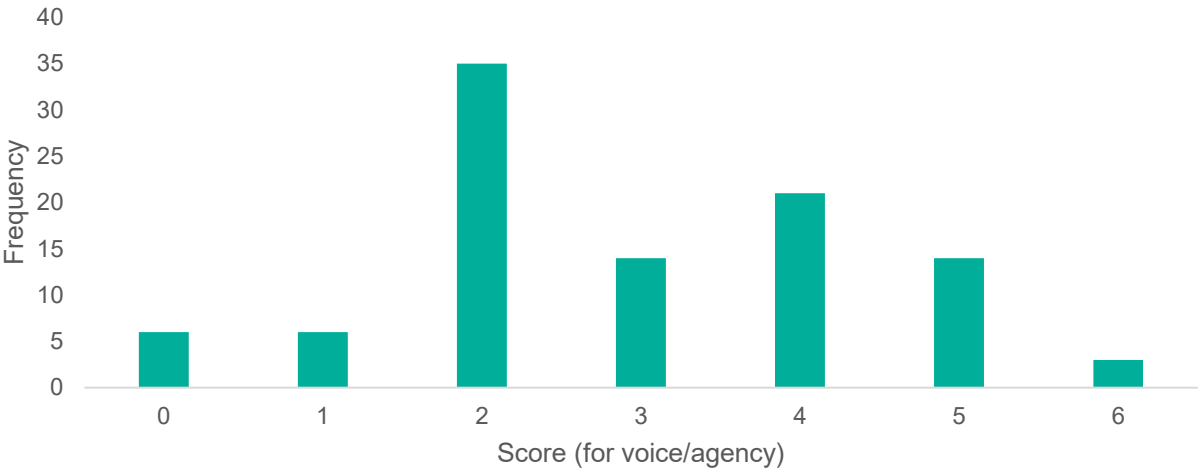
Within the household, women's opinions around vegetable cultivation and marketing seem to be taken more seriously at the time of the survey relative to before they worked as a cluster (Figure 4). Many women share stories of the transformation, where resistance, skepticism and sometimes backlash from other household members in the early days of the APCs turned eventually into acceptance and support. One woman noted: "Men are not usually involved in doing housework in the past, but as income from vegetables is increasing, men have started doing more work at home, such as drawing water, serving food and cooking or childcare". Mayurbhanj (June 19, 2024). Another observed: "I grow a lot of vegetables, earlier I used to grow very less, now after PG-PC group my production has increased, and my family members also have no problem with this. Earlier, some of my family members used to hesitate a little regarding this PG group of mine, but not anymore, they cooperate a lot now". Anugul (Oct 25, 2025).

Table 2: Voice and agency within the cluster

Details	Percentage	Number of responses
Participation, voice and agency		
<i>Decision to join PG/PC</i>		
Joined PG of their own accord	57	84
Were persuaded by other members of the SHG	31	84
Joined because family, NGO staff, govt officials said so	12	84
Had to convince family members to allow	39	99
<i>Attends meetings</i>		
*Has attended almost all the meetings	28	99
Has attended meetings quite regularly	40	99
Has attended few or no meetings	31	99
*Has held position of responsibility in PG/PC	3	99
*Voted on any matter placed before the group	45	99
* Represented your group in any meetings and discussions (e.g. with buyers, suppliers, or government officials)?	22	99
*Has voiced your opinion on any aspect of group farming for vegetables	50	99
*Woman usually received the proceeds of the sale	74	99
<i>Who decides how income is used or shared</i>		
*Mostly the woman herself	71	99
Woman decides jointly with others	20	99
<i>Bargaining power with the traders post-APC</i>		
Increased bargaining power	77	99
No change	22	99
Reduced bargaining power	1	99
Support		
Receives active encouragement and support from at least some members of my family	47	99
Household members mostly tolerate her involvement	47	99
Household members tend to discourage her from APC activities	5	99

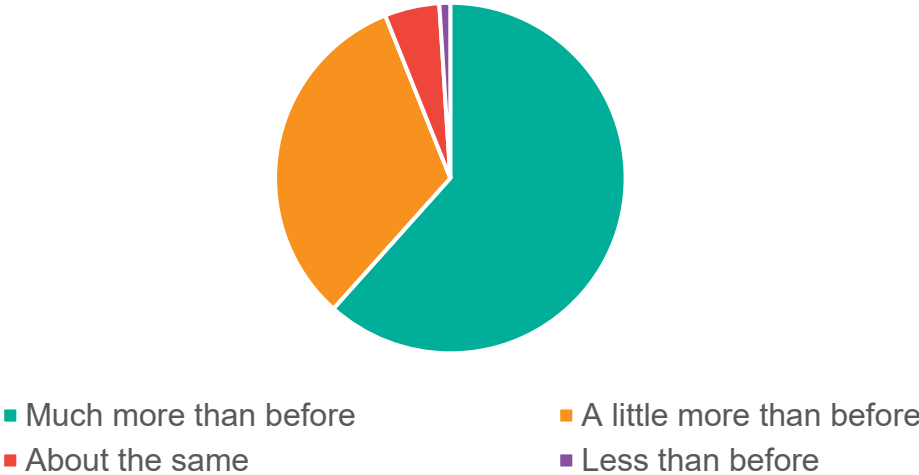
Source: INCATA Odisha Farmer Survey, 2025. Note: The starred variables are used to compute a score depicted in Figure 3.

Figure 3: Voice and agency score



Source: INCATA Odisha Farmer Survey, 2025. Notes: This score is a simple sum of binary indicators based on Table 2 (starred): attended all meetings, held position of responsibility, voted on any matter, represented the group, voiced opinion; typically received the proceeds of sale and most decided how to use it.

Figure 4: Compared to when you joined the group, how much do you feel your opinions matter in farming and marketing decisions now within your household?



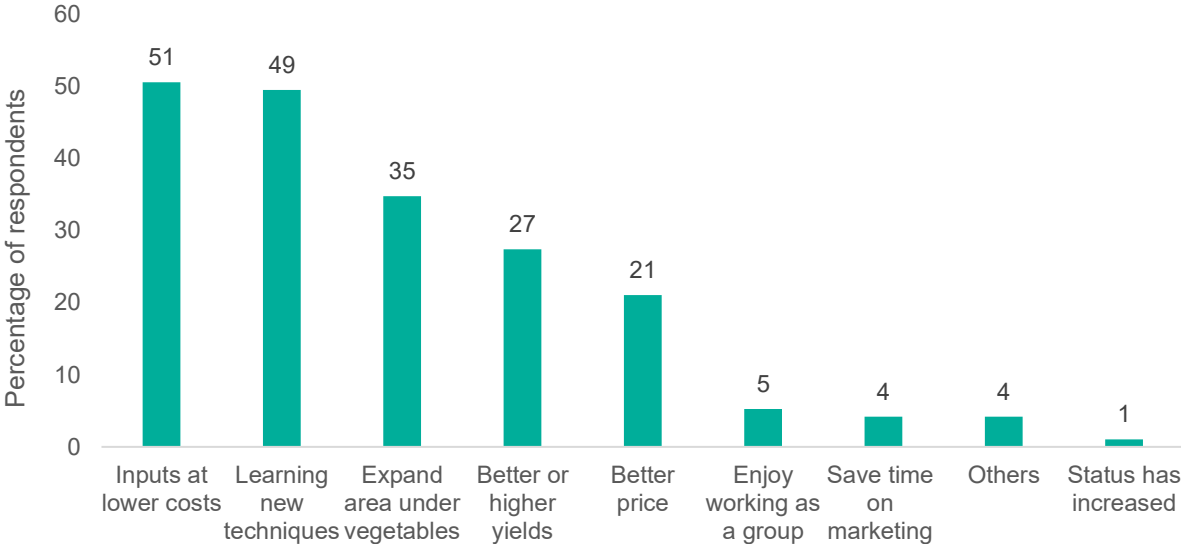
Source: INCATA Odisha Farmer Survey, 2025

Prognosis and reflections on the way forward

By all accounts, the APC clusters we visited are perceived as being transformative. In Anugul, the CSO managing the implementation of the program noted: “When we first started only a few showed interest...Since the APC grew and women started to benefit, now people are really keen on joining, but need to close the memberships since we can’t make the groups too large.”

In our survey, 84% of the women we interviewed felt vindicated by the decision to join the cluster and were happy that they did, with most of the others saying they did not feel strongly either way. Most of those we interviewed intended to continue working together as a cluster. Only 4% were disinclined to continue (due to lack of time and the fact that they did not find vegetable cultivation lucrative). Their desire to continue being part of the program is driven for many reasons: being able to obtain inputs at lower costs, learning new techniques of vegetable production and notably the fact that they were able to expand the area under vegetable cultivation, produce more via better yields and obtain better prices (Figure 5:).

Figure 5: Motivations for continuing as part of the cluster



Source: INCATA Odisha Farmer Survey, 2025

The positive experiences described in this note are unlikely to be universal, and we caveat our results that our sample may suffer from survival bias. That is, those who continue to grow vegetables as part of a cluster are those happy to do so. Notwithstanding this, it is possible to reflect on and draw from the APC experience.

Broadly, our findings suggest that there may be an important role for organized clusters to promote inclusive vegetable commercialization, in contrast to spontaneous clusters that may reinforce historical gender and caste inequalities. The explicitly inclusive targeting strategy, when effective, appears to ensure this. (See Policy Note 10 for inclusivity in spontaneous clusters.)

Second, a potential ingredient of success of the APCs is the strategic decision to link to existing mid-stream players once these organized clusters can produce enough. In this, the choice of crops with ready demand and the preexistence of traders helps the viability of organized clusters.

A third ingredient of success is the fact that APCs built on prior institutions, a practice that has been successful in inclusive value chain formation in other instances as well (Narayanan et al. 2024).

Many cluster interventions tend to fail when the program ends (Belton et al., 2024; Narayanan et al., 2025). The willingness of existing APC members to continue to cultivate vegetables as a cluster is encouraging, and the culmination of the APC in the formation of Farmer Producer Companies (FPCs) can potentially ensure continuity. At the same time, the variable performance of FPCs in India suggests that the test of the APC's success lies in the ability of these FPCs to become viable. Evidence suggests that these clusters and institutions are themselves diverse—some FPCs might flounder and become survival clusters, whereas others may be embryonic, offering the promise of growth. Efforts must be made to track and monitor the performance of these newly formed FPCs and adopt a differentiated strategy for supporting them: continued handholding for the former and FPC accelerator programs for the latter.

Last but not least, the CSOs that led the APC performed multiple functions, harnessing a wide range of resources, including access to public infrastructure, government funds and programs, market intelligence, and technology transfer. As one CSO staff member put it, "the APC served to connect the dots while organizing women into collective activities and in doing so converged schemes for benefits of the community at large" (December 2024). It is hard to imagine the FPCs formed as part of the APCs can take on these multiple roles. The survival of the FPCs beyond the APC may rely on the state not kicking away the ladder too soon.

ABOUT THE AUTHORS

Sudha Narayanan (S.Narayanan@cgiar.org) is a Senior Research Fellow in the Development Strategies and Governance (DSG) Unit at IFPRI.

Ben Belton (Ben.Belton@cgiar.org) is a Research Fellow in the Development Strategies and Governance (DSG) Unit at IFPRI.

Bhumika Mishra (M.Mishra@cgiar.org) is a Research Analyst in the Development Strategies and Governance (DSG) Unit at IFPRI.

Md Sadat Anowar (S.Anowar@cgiar.org) is a Research Analyst in the Poverty, Gender and Inclusion (PGI) Unit at IFPRI.

ACKNOWLEDGMENTS

We thank without implicating the staff of PRADAN, Foundation for Ecological Security (FES), Sambalpur Integrated Development Institute (SIDI) for their generosity in sharing valuable insights over multiple conversations. The INCATA project was implemented under a Memorandum of Understanding between the International Food Policy Research Institute and the Government of Odisha. We gratefully acknowledge the guidance and strategic direction provided by Dr. Arabinda Kumar Padhee (IAS), Additional Chief Secretary to the Government, Department of Agriculture & Farmers' Empowerment (DA&FE), Government of Odisha. We also extend our sincere appreciation to Sri. Pawan Kalyan (IAS), Director of Horticulture, Government of Odisha, Smt. Dharitree Mishra, Managing Director, Odisha State Agricultural Marketing Board (OSAMB), Sri Shubhranshu Mishra (OAS), Additional Secretary to the Government, DA&FE, Government of Odisha, Dr. Sangram Kesari Pattanaik, Joint Director of Agriculture, DA&FE, Sri Nagendra Kumar Mallik, Dy. Director of Agriculture, DA&FE and other officials and staff of the Government of Odisha for their valuable advice, inputs, and support in facilitating field-level activities.

REFERENCES

- Belton, B., Breisinger, C., Kassim, Y., Pal, B.D., Narayanan, S. and Zhang, X.. 2024. "Cluster-based development: Lessons from country experiences for Odisha, India." *South Asia Policy Perspectives* 1. New Delhi, India: International Food Policy Research Institute. <https://hdl.handle.net/10568/152082>.
- Belton, Ben, Narayanan, S., Mishra, B., Trivelli, C., Liverpool-Tasie, S., Reardon, T. (2026) Commercial small scale vegetable producers and inclusive agricultural transformation in Odisha An introduction to the methods and hypotheses of the INCATA project, Project Note 1.
- Govil, R., Neti, A., & Rao, M. R. (2020). Farmer producer companies: Past, present and future. <https://publications.azimpremjiversity.edu.in/2268/1/Farmer%20Producer%20Companies.pdf>
- Malhotra, S. K., Mantri, S., Gupta, N., Bhandari, R., Armah, R. N., Alhassan, H., Young, S., White, H., Puskur, R., Waddington, H. S., & Masset, E. (2024). Value chain interventions for improving women's economic empowerment: A mixed-methods systematic review and meta-analysis. *Campbell Systematic Reviews*, 20, e1428. <https://doi.org/10.1002/cl2.1428>
- Narayanan, Sudha; Raghunathan, K., and Gautam, A. (2024). Leveraging public works for sustainable and resilient livelihoods: Four case studies from India's Mahatma Gandhi National Rural Employment Guarantee Act. IFPRI Discussion Paper 2318. Washington, DC: International Food Policy Research Institute. <https://hdl.handle.net/10568/169341>
- Narayanan, S.; Sakil, A.Z.; Kabir, R.; Redoy, Md.; and Belton, B. 2025. Life after a cluster intervention: Insights from shrimp farming in Bangladesh. IFPRI Project Note. Washington, DC: International Food Policy Research Institute. <https://hdl.handle.net/10568/179366>
- PRADAN (2024) Promotion of Agriculture Production Clusters (APC) in Odisha Annual Progress Report FY: 2023-24, APC Program Secretariat, PRADAN
- Quisumbing, A., Heckert, J., Faas, S. *et al.* Women's empowerment and gender equality in agricultural value chains: evidence from four countries in Asia and Africa. *Food Security*. 13, 1101–1124 (2021). <https://doi.org/10.1007/s12571-021-01193-5>
- Twyman, J.; Moreno, M.; Claros, L.M.; Suazo, C.; Wiegel, J. (2022) Helpers, employees, and owners: Opportunities for women's empowerment in agricultural value chains. Cali (Colombia): International Centre for Tropical Agriculture. 67 p. <https://hdl.handle.net/10568/117827>

This work was supported by the CGIAR Accelerator on Gender Equality and Inclusion and the Gates Foundation GRANT INV-066950 and has not been independently peer reviewed. Any opinions expressed here belong to the authors and are not necessarily representative of or endorsed by IFPRI or CGIAR. The conclusions and opinions expressed in this work are those of the authors alone and shall not be attributed to the Foundation. This work is a contribution to the CGIAR Accelerator on Gender Equality.

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

A world free of hunger and malnutrition

IFPRI is a CGIAR Research Center

1201 Eye Street, NW, Washington, DC 20005 USA | T. +1-202-862-5600 | F. +1-202-862-5606 | Email: ifpri@cgiar.org | www.ifpri.org | www.ifpri.info

© 2026 International Food Policy Research Institute (IFPRI). This publication is licensed for use under a Creative Commons Attribution 4.0 International License (CC BY 4.0). To view this license, visit <https://creativecommons.org/licenses/by/4.0>.