HOW INCLUSIVE IS TRANSFORMATION IN ODISHA'S VEGETABLE VALUE CHAINS?[1]

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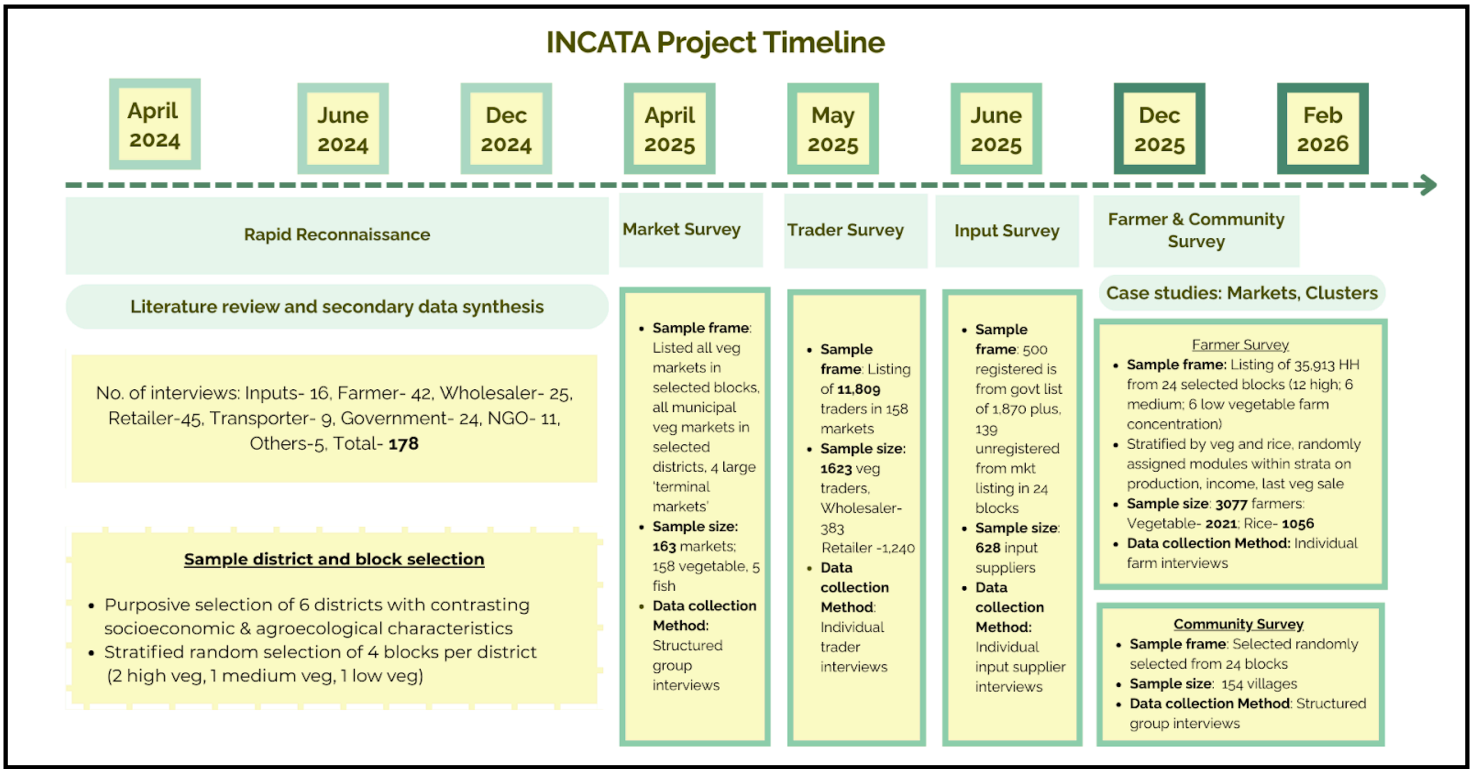
The research project "Tracking commercial small-scale producers for inclusive agricultural transformation" (INCATA) studied the relationships between commercial small-scale producers (farmers) and micro, small and medium enterprises (MSMEs), to understand whether and how these relationships could contribute to inclusive agricultural transformation.

FIGURE 1: TIMELINE OF INCATA PROJECT ACTIVITIES IN ODISHA.



To address the questions, INCATA focused on the value chain associated with commercial small-scale horticulture (vegetable cultivation) in Odisha. The vegetable value chain was selected because of a high level of participation and commercial orientation among small-scale vegetable producers, the high value of vegetable crops relative to staples, and the importance of vegetables for nutrition.

Figure 1 summarizes INCATA research activities in Odisha. Between June and December 2024, we conducted 'rapid reconnaissance' research comprised of 178 interviews with actors in the vegetable value chain, covering 19 of Odisha's 30 districts and 25 markets. This allowed us the understand the broad "lay of the land", refine research questions, and design effective sampling strategies and questionnaires for a series of integrated "stacked surveys".

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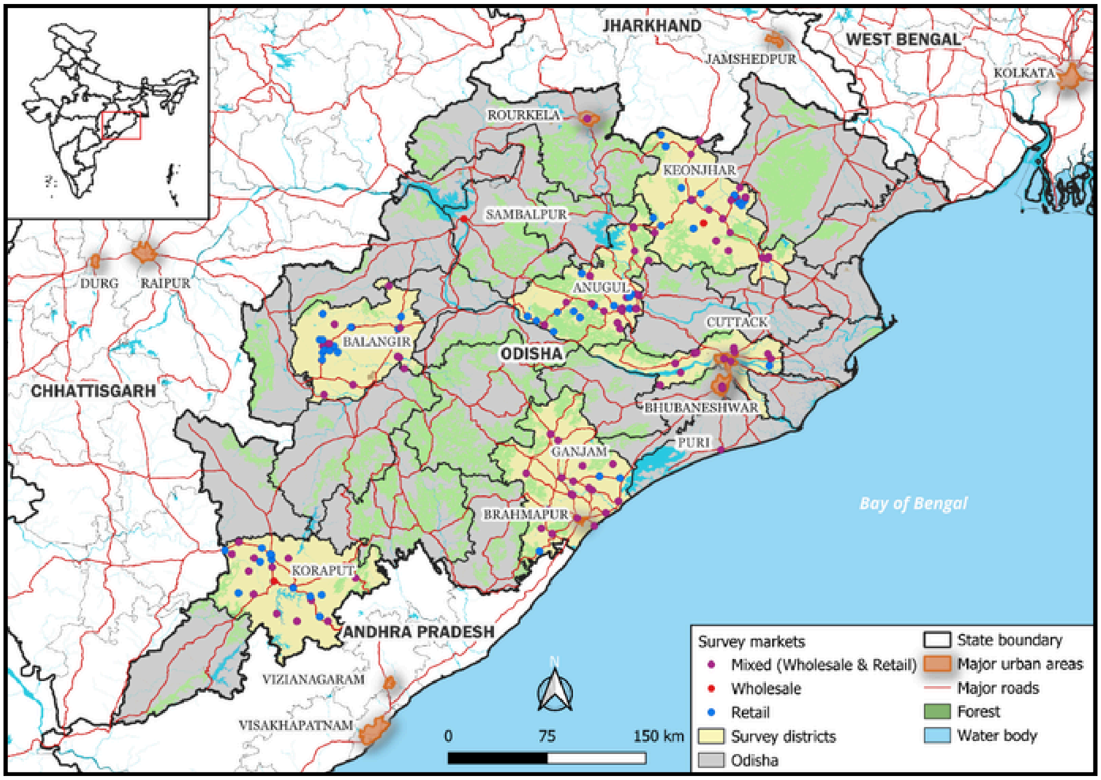
Between April and December 2025, we implemented six linked surveys, covering: vegetable markets (158), farming communities (154), agricultural input suppliers (628), farmers (3,077), vegetable wholesalers (383) and vegetable retailers (1,240): 5640 interviews in total. The surveys were conducted in six districts, selected purposively for their contrasting socioeconomic and agroecological conditions. Survey districts and the locations of surveyed markets are depicted in Figure 2.

FIGURE 2: MAP OF ODISHA SHOWING THE DISTRICTS AND MARKETS INCLUDED IN THE INCATA SURVEYS



In this research brief we synthesize key results from all 6 surveys to assess how inclusive the process of agricultural transformation in Odisha's vegetable value chains has been. The surveys were designed to capture statistically representative data that would allow us to answer the research questions set out in Box 1. Each question is answered in the following subsections

Box 1: Research questions about the inclusiveness of vegetable value chains in Odisha arising from the rapid reconnaissance

- How are vegetables markets transforming?
- Who is included in the vegetable value chain, and on what terms?
- Are the relationships between actors in Odisha's vegetable value chains parasitic or symbiotic?

How are vegetable markets in Odisha transforming?

- **Odisha's agricultural marketing policy has been progressively reformed since the 2000s**, to allow contract farming, establishment of private markets, free vegetable trade from regulatory oversight, and abolish fees associated with transacting in the regulated markets.
- **More private markets have emerged recently and they trade more vegetables than publicly regulated markets.** More than 90% of the vegetables traded in surveyed markets were delivered to an unregulated market.
- **Vegetable markets experienced rapid transformation over past decade.** During this period:
  - Markets became perennialized, operating more days per week and more hours per day on average, with larger numbers of permanent stalls.
  - Numbers of wholesalers and retailers per market grew significantly, by 65% and 20% respectively.
  - The total quantity of vegetables traded increased by 74%, with 87% of markets registering an increase in volumes sold.
  - Growth in the volumes of vegetables traded was accompanied by diffusion of trade across markets, not concentration.
- **Businesses in markets that provide services to the vegetable value chain grew rapidly.** The rate of increase in enterprises such as agricultural input shops, borewell drilling businesses and trucking logistics companies exceeded that of the rate of growth of marketplaces, suggesting cluster densification took place (Table 1).
- **Deliveries to markets became more motorized and vehicle sizes increased.** Deliveries made on foot and by bicycle declined, while those by autos and motorbikes increased, reflecting greater rural mobility, and travel times from vegetable growing villages to markets fell sharply. Deliveries by 20-ton trucks, used for moving large volumes of goods from out of state grew most rapidly, among all types of vehicle, albeit form a low base.
- **Most villages have multiple marketing options available locally.** Farmer-retailers who sell their own produce are found in two-thirds of villages. About half of villages are home to vegetable retailers who sell within the village and more than one-third are home to at least one retailer who buys vegetables in the village to sell outside. About half of villages are visited by traders from outside the village during high season, and more than one-third of villages each are home to transporters who deliver to outside or are visited by transporters from outside.

TABLE 1: TOTAL AND MEAN NUMBER OF ANCILLARY ENTERPRISES AND SERVICES IN THE VICINITY OF SURVEYED VEGETABLE MARKETS, 2015 AND 2025

Number of...	2015	2025	% change (2025/2015)
Markets	140	158	13
Agricultural input shops	218	340	56
Agricultural machinery shops	53	98	85
Borewell drilling businesses	6	24	300
Farmer producer companies (FPCs)	10	41	310
Private cold storage businesses	3	13	333
Trucking logistics companies	88	160	82
Bag sellers	946	1415	50
Bank branches	72	125	74
ATMs	42	111	164

Source: INCATA Odisha Farmer Survey, 2025

- **Market infrastructure is often inadequate or unsuitable.** Many markets lack basic amenities such as water, sanitation, or electricity, and much of the infrastructure provided in regulated markets is unused or underutilized due to a lack of user centered design. For instance, permanent market stalls and warehousing often remain empty because they are sited in places with few passing customers.

Who is included in Odisha's vegetable value chains, and on what terms?

- **Participation in Odisha's vegetable value chains is highly uneven across nodes.** The two most remunerative segments, input supply and wholesaling, are dominated by non-scheduled caste men, with very little inclusion of women and members of scheduled castes and tribes (Table 2).
- **Farming is the most inclusive node of the vegetable value chain,** with a gender and caste composition of vegetable farmers that closely resembles that of the general population.
- **Retailing is the most inclusive off-farm vegetable value chain node.** Low entry barriers make it an important off-farm livelihood diversification pathway for women and marginalized groups, but they are still underrepresented relative to the general population.
- **There is a high level of intersection between gender and caste characteristics of inclusion in retailing**. Almost half of scheduled caste and scheduled tribe retailers are women, as compared with only 20 percent of those from non-scheduled castes.
- **Women and members of scheduled castes and tribes engaged in vegetable retailing face substantial disadvantages.** They start their enterprises with lower levels of capital, make smaller average transactions, accumulate less, and earn lower incomes than men and retailers from non-scheduled castes. They also experience a more acute digital divide and exercise less agency in price setting than their male and non-scheduled caste counterparts. However, despite the challenges they face, women and marginalized groups perceive greater opportunities for business expansion than men and members of non-scheduled castes.
- **Women and scheduled tribe and caste retailers disproportionately serve female consumers.** Female retailers served other women in 35% of their most recent sales transactions, as compared to 18% of male retailers, suggesting that women's participation in retailing may also be inclusive for female consumers.

TABLE 2: GENDER AND CASTE COMPOSITION OF ODISHA POPULATION AND INCATA SURVEY SAMPLE POPULATIONS.

Category	Odisha population (%)	Vegetable farmers (%)	Input suppliers (%)	Vegetable wholesalers (%)	Vegetable retailers (%)
Female	49	42,2	2,7	1	27,5
Scheduled tribe	23	23,8	0,8	0,5	10,1
Scheduled caste	17	19,1	5,3	3,9	15
Non-scheduled caste	60	56,9	94	95,6	74,9
N	-	2021	628	384	1239

Source: *Population census (2011), ≠Own surveys. ‡The total survey N for vegetable farmers is 2021, but households were assigned to subsamples who were administered with different combinations of modules so in subsequent tables the N for vegetable farmers may differ by variable. † Estimated as women's share of family labor days devoted to farming the household's main vegetable crop.

Are relationships between actors in Odisha's vegetable value chains parasitic or symbiotic?

- **Vegetable trade is largely based on long-term relationships, repeat transactions, and trust.** Most exchanges occur between regular trading partners, with relationships spanning 5-9 years on average.
- **Value chain finance is uncommon and tied credit is rare.** More than 90% of input suppliers and retailers provide no credit of any kind, and fewer than 2% of surveyed enterprises impose exclusive tied-credit obligations on buyers or sellers, and less than 2% of farmers had taken any cash or in-kind loan from a vegetable trader or input supplier within the past year.
- **Trade credit functions primarily as short-term working capital.** Wholesalers allowed buyers to delay payments for vegetables for several days at no cost in almost 40 percent of their most recent sales transactions, facilitating trade without "locking in" buyers.
- **Farmers are not heavily credit constrained.** Half of vegetable farmers borrowed money to fund agriculture within the past year, and only 5 percent of non-borrowing vegetable farmers reported that they wished to access agricultural credit but were unable to. Most farmers borrowed from family or friends. Self-help groups (SHGs) were also an important source of credit, with 26% of farmers who took loans borrowing from them.
- **Input suppliers are the main source of advisory services for farmers.** Nearly half of farmers sought advice from input suppliers during their most recent purchase, and over half received it, largely free of charge. Farmers consider input suppliers to be the most valuable source of advice on vegetable farming by far.
- **Wholesalers and retailers often provide transport services when sourcing or supplying vegetables.** These services are usually costed into the price of goods received or sold, but are convenient for time- or mobility-constrained farmers and other trading partners. Much of the transport organized by traders is supplied by third-party service providers (transport businesses).

- **Provision of other types of service by wholesalers, retailers, and input suppliers to their suppliers and customers is quite limited,** indicative of an intermediate level of value chain transformation.
- **Market "thickness" and competition appear to moderate exploitative behavior.** Improvements in infrastructure, mobility, communications, and the spatial clustering of farms and MSMEs may limit the ability of marketing intermediaries to create dependencies among farmers, and improve access to information and markets, lowering barriers to entry and giving rise to outcomes that are more symbiotic than exploitative.

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