



REVIEW ARTICLE

# Unlocking growth for small and marginal farmers: Transformative role of Farmer Producer Organisations in market access and economies of scale

Kartike Sharma<sup>1\*</sup>, Kajal Sharma<sup>1</sup>, Rashmi Chaudhary<sup>1</sup>, Yasmin Janjhua<sup>1</sup>, Shiva Thakur<sup>2</sup> & Yashwant Singh<sup>1</sup>

<sup>1</sup>Department of Agribusiness Management, Dr Y.S. Parmar University of Horticulture and Forestry, Nauni, Solan 173 230, Himachal Pradesh, India

<sup>2</sup>Mittal School of Business, Lovely Professional University, Jalandhar 144 411, Punjab, India

\*Correspondence email - [kartikesharma08@gmail.com](mailto:kartikesharma08@gmail.com)

Received: 30 December 2025; Accepted: 19 April 2026; Available online: Version 1.0: 01 July 2026

**Cite this article:** Kartike S, Kajal S, Rashmi C, Yasmin J, Shiva T, Yashwant S. Unlocking growth for small and marginal farmers: Transformative role of Farmer Producer Organisations in market access and economies of scale. *Plant Science Today*. 2026; 13(sp5): 1-11. <https://doi.org/10.14719/pst.13438>

## Abstract

The Farmer Producer Organisations (FPOs) represent a key institutional innovation aimed at addressing the structural limitations of small and marginal farmers by enhancing collective bargaining power, improving market access and attaining economies of scale. Despite increasing policy support and expanding research, existing literature remains fragmented, particularly in explaining how financial, governance, infrastructural and socio-cultural factors influence FPOs' performance and sustainability. This narrative review synthesises evidence from India and comparable international contexts to give a thematic understanding of the roles, benefits and constraints associated with FPOs. The findings reveal that while FPOs highly contribute to reducing transaction costs and improving access to inputs and markets, their long-term sustainability depends on stronger institutional capacity, improved financial support and effective governance structures. It also identifies important research gaps related to gender inclusion, comparative assessments and longitudinal evaluation of large-scale national programmes. By consolidating dispersed evidence, the study provides a deeper understanding of the transformative potential of FPOs as an inclusive and sustainable instrument of agrarian development.

**Keywords:** agricultural development; collective action; economies of scale; Farmer Producer Organisations; India; market access; small and marginal farmers

## Introduction

The rural economy of India is agriculture-based and most farmers are small or marginal farmers (1). Agricultural lands are highly fragmented, with more than 86 % of agricultural landholdings being 2 ha or less. From 2.3 ha in 1970–71 to 1.08 ha in 2016, the average land-holding size has gradually declined, which limits mechanisation, weakens bargaining power and restricts farmers' access to quality inputs and markets (2, 3). And because of this, many small and marginal farmers are currently unable to maintain sustainable and profitable agricultural practices. Small and marginal farmers face several challenges in addition to low productivity, such as relying on the monsoon, ineffective supply chains, lack of post-harvest infrastructure facilities and the presence of several intermediaries that further diminish or reduce their profits (4, 5). Such a trend is typical and is most often seen in developing economies, as long marketing chains result in middlemen capturing a significant portion of the final sale price paid by farmers (6). As a result, many small and marginal farmers remain trapped in a cycle of low productivity and weak market participation (7).

The harsh conditions under which small and marginal farmers have been living have brought severe social and economic implications. Due to severe debt levels, fluctuating commodity prices and continuous financial instability, farmers are taking their own lives

more often. This reflects the severity of the structural challenges affecting smallholder livelihoods (8). In response to these challenges, institutional support mechanisms such as Farmer Producer Organisations (FPOs) have become increasingly important, particularly in developing countries like India, where approximately 88 % of agricultural households are small and marginal farmers (9). However, the effectiveness of these organisations depend largely on access to institutional support systems that facilitate inputs, market information and extension services (10).

The FPOs are increasingly recognised as an important institutional mechanism for strengthening collective bargaining power, improving market access and enabling economies of scale for small and marginal farmers (11, 12). Recognising the potential of these organisations, the Government of India has tried to promote FPOs as long-term structural solutions to agricultural challenges being faced by the small and marginal farmers. This commitment was formally highlighted when the year 2014 was declared as the year of FPOs (13, 14). Following this momentum, the Government of India launched a special central sector program called Formation and Promotion of Farmer Producer Organisations, to establish 10000 new FPOs within 5 years. Up till 2027–28, the initiative has been funded with ₹6865 crores. The Department of Agriculture and Farmers Welfare is coordinating its implementation and Cluster-Based Business

Organisations (CBBOs) operate on state and regional levels (15, 16). Globally, farmer organisations have played a crucial role in improving the living standards of small and marginal farmers. Through this cooperation, farmers can negotiate better with their policy requirements, share useful expertise and obtain better market conditions (3). These institutions or organisations are not just valuable in terms of monetary benefits; by strengthening the resilience and long-term stability of smallholder farming communities, they also support social empowerment and help in accomplishing sustainable development goals (SDGs) (8). The FPOs are widely seen as a model that can be modified to improve how small and marginal farmers engage with agricultural markets, as these organisations provide farmers with the opportunity to participate in national and international value chains with more confidence and competitiveness by reducing structural constraints (17).

Emerging literature demonstrated that FPOs are important for improving market access, bargaining power and economies of scale for small and marginal farmers. Despite this general acceptance, very little is known about how different factors, such as member participation, financial access, infrastructure, institutional support and governance quality influence one another to determine the long-term performance and sustainability of FPOs. Although a lot of research has already been done on the advantages of FPOs in terms of reducing costs, improving market connections or access and securing better prices for producers, very little has been done to show how these advantages can change with the change in area or interact with practical difficulties. Most publications focused on the potential of FPOs as catalysts for rural development; however, issues such as managerial limitations, operational bottlenecks and contradictory policies have received less attention. This gap indicates that further study is needed to fully understand the favourable circumstances and the barriers that may influence the impact of FPO. In turn, this review uses both the evidence in India and similar experienced cases in the world. It offers a thematic analysis of the benefits and constraints that are associated with FPOs and provides insights into institutional and policy contexts in which they are operated.

## Methodology

The present study took the narrative review methodology, whereby peer-reviewed journal articles, policy documents and institutional reports published between 2005 and 2025 were utilised to rigorously synthesise the theoretical and empirical literature available on the role of FPOs to enhance market access and attain economies of scale among small and marginal farmers, especially in India and other similar developing country settings.

Different combinations of keywords were used with Boolean operators (AND / OR) to identify relevant studies from different databases such as Google Scholar, ScienceDirect and JSTOR. First, the titles and abstracts of the identified studies were filtered to identify the relevant ones and then the selected studies were assessed using the full-text screening. A thematic synthesis approach was then adopted and the studies were coded into major themes including the concept and institutional framework of FPOs, their benefits in enhancing market access and economies of scale, the constraints associated with FPOs and the policy interventions that support their sustainability. This assisted in establishing recurrent patterns and conceptual understanding of how FPOs can be institutional mechanisms to enhance smallholder participation in the agricultural markets.

## Concept of Farmer Producer Organisations

Just like cooperatives, FPOs are also based on the idea of mutual aid, but they also possess some additional characteristics that are somehow linked to the private companies (Table 1) (12). From a theoretical perspective, the functioning of FPOs can also be understood through collective action theory, institutional economics and transaction cost economics, which explain how farmer aggregation helps overcome coordination constraints, reduce market-related transaction costs and strengthen access to shared services and value chains. These perspectives provide an analytical basis for understanding FPOs as institutional mechanisms that enhance the participation of small and marginal farmers in agricultural markets (6, 12, 13). Over the last decade, the idea of FPOs has changed, or in other words, it has evolved. In 2000, Y.K. Alagh headed a committee that made recommendations for setting up a producer-owned business (18). These recommendations led to a major legal shift in the Companies Act of 1956, where it was amended to include a new section IXA on producer companies. The main goal was to create a hybrid or integrated institutional framework that can help in combining the professionalism and efficiency of the systems with mutual benefit, especially for small and marginal farmers (19). According to the amendment in the act, producer organisations are considered an enterprise or business that the primary producer has officially registered. Whereas in the context of FPOs, farmers are the primary producers and according to the law, only those who are directly engaged in primary production can be members of such organisations (20, 21). In 2013, the Indian Government specified the responsibilities of the State and National institutions in supporting and promoting FPOs, where NABARD, as a nodal agency, started to support FPOs under the Producer

**Table 1.** Difference between co-operatives and producer companies

| Parameter                                | Co-operatives                                                                       | Producer companies                                               |
|------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------|
| <b>Legal framework</b>                   | Cooperative Societies Act                                                           | Indian Companies Act                                             |
| <b>Geographical scope</b>                | Restricted to a specific region                                                     | Operates across India                                            |
| <b>Nature of business</b>                | Service and delivery agencies                                                       | Marketing solutions for pooled produce                           |
| <b>Membership basis</b>                  | Ownership of land                                                                   | Shareholding model                                               |
| <b>Share transferability</b>             | Non-tradeable                                                                       | Transferable among members at par value                          |
| <b>Profit sharing</b>                    | Limited dividends on shares                                                         | Based on the business volume of members                          |
| <b>Voting rights</b>                     | One member, one vote; the government and registrar of co-operatives hold veto power | One member, one vote; Only active members can vote               |
| <b>Governance</b>                        | Federated under the District Cooperative Central Bank (DCCB), government-supported  | Independent, self-reliant and self-governing                     |
| <b>Reserves</b>                          | Created only when profits are available                                             | Mandatory                                                        |
| <b>Borrowing power</b>                   | Limited to loans from cooperative banks                                             | More financial freedom, access to external capital               |
| <b>Business and non-profit relations</b> | Transaction-based relationships                                                     | Collaborative ventures with corporations and non-profit entities |

Sources: (25, 12)

Organisation Development and Upliftment Corpus Fund and the Small Farmers Agribusiness Consortium (SFAC) was given the task of promoting FPOs in different states and districts (22, 23). Furthermore, various departments of the state, including agriculture, horticulture and animal husbandry, etc., continued to support the idea of FPOs so that more farmers can actively participate (24).

### Transformative role of Farmer Producer Organisation

The FPOs, being an innovative type of entity, also represent an important change in the structure of rural agriculture (26, 27). These organisations do much more than just assist farmers to gain market access and to increase bargaining power. By many, it is believed that FPOs enhance social resiliency, promote agripreneurship through innovative ideas and help in achieving sustainability and development goals (28, 29). In India, where most of the farmers are small and marginal, FPOs offer them a sustainable path from fragmented and vulnerable agricultural practices to more coordinated, collective and strong farming operations (30).

The way in which agricultural markets are operating nowadays presents a prominent change brought by FPOs. Farmers can now negotiate better, can lower their input costs and can also have more direct access to the agricultural markets by pooling their produce. This collective action eliminates the need for middlemen who used to earn a large portion of the value (24). Additionally, many FPOs in India are now moving beyond just simple aggregation of farmers and are now involving themselves in different activities of the value chain, such as processing, branding and retailing of the produce (31). For example, Shaydri farms a small collective in Maharashtra, which started as a simple collective and has now grown into an export-oriented agribusiness. It clearly highlights how such organisations can achieve better and may successfully close the gaps that mainly exist between primary production and agricultural markets (32). The positive effects of FPOs do not just limit to the economic gains but also extend into the sphere of social inclusion and farmer empowerment (33). From the literature, it is evident that FPOs that are particularly headed by women have shifted the gender dynamics mostly in rural areas. Such organisations are creating new opportunities for women and offering them alternatives to traditional norms of patriarchy. It is also clear that when women participate in decision-making related to different activities of the value chain, such as production, processing, marketing and value addition, society's general perception of gender roles is also affected in a positive way, in addition to an increase in household incomes (34). The FPOs provide a platform for marginalised groups, such as those based on gender, caste or economic status, to be represented in these institutions and organisations so that they can engage more actively in the agricultural value chains. By doing so, FPOs could contribute to the creation of more active, participatory and inclusive rural economies, which help to achieve one of the objectives, that is to improve the living standards of rural economies.

The FPOs are considered an important entity to strengthen small and marginal farmers' adaptability and sustainability on a larger level. As previous researchers noted, these organisations help in reducing market volatility, enabling farmers or people to make more money with limited changes and also encouraging less harmful farming practices (28). Not only this, but for many farmers, FPOs serve as sources of innovation and agripreneurship in addition to their stabilising function (17). As a case from Tamil Nadu, it was highlighted that farmers who are part of FPOs find it easier to switch

from traditional methods of farming to more entrepreneurial forms of agricultural practices. With the growing number of FPOs, these organisations encourage other farmers who are still not a part of it to experiment with new and improved farming practices, seeking creative business models and increasing their market reach and overall profitability (35). In terms of Governance, FPOs played a crucial part by allowing farmers to get involved in creating knowledge, such as understanding ups and downs of the markets, new technologies or sustainable practices, while also allowing them to make strong and effective decisions by themselves that affect their livelihoods. Previous studies reveal that experts and farmers, by working together, can enhance technical capabilities and strengthen the fundamentals of sustainable development in Forest and Farm Producer Organisations (FFPOs) (36). Also, now FPOs are not just involved in production and marketing activities, but they are also supporting and advocating for farmers' rights, taking part in initiatives related to rural development and making contributions to the creation of programs related to agriculture and farmers as well.

Earlier, the farmers were considered passive beneficiaries who received schemes and support from the government. Now, since the FPOs are becoming more active and are engaged to shape the direction of rural development (3). Similar experiences from other countries also demonstrate the importance of these organisations. According to another study, in Guatemala, umbrella organisations help in supporting and turning small, local innovations into large-scale initiatives and contribute towards more significant shifts across entire agri-food systems (29). Not only this, but they also build a strong sense of identity among themselves and encourage experimentation among farmers without any hesitation. Similar trends are now emerging and rising in India as well, where FPOs play a similar role by connecting or linking local innovation or local creativity to the major and larger institutional frameworks, particularly those that are being operated through cluster-based business models (31). This clearly shows that FPOs have the power to influence the entire agricultural system and not just individual farms. Despite these advancements, there are some loopholes that hamper and hinder the proper efficiency of the FPOs. For example, many organisations are still struggling with improper infrastructure, low member participation in FPOs, low financial literacy and inconsistent policy frameworks for the smooth functioning of FPOs (28, 37). However, small and marginal farmers are already experiencing the measurable results because of the influence of FPOs in certain different aspects such as market linkages, collective action, social inclusion and entrepreneurial development (12, 17, 33). Also, recent literature highlights the environmental and social aspects of FPOs, such as promoting and supporting climate-smart practices, gender inclusion and resilience building in addition to their institutional activities.

Overall, the evidence indicates that the transformational role of FPOs goes beyond better market participation to a stronger institutional connection and collective agency of farmers. However, the magnitude of these benefits differs among regions based on the governance quality, managerial capacity and access to financial resources. Indian context studies suggest comparatively better results in the case of continuous policy support and institutional facilitation systems, which support the significance of an enabling ecosystem to make the full potential of FPO-led collective action come true.

To better understand how the functions and outcomes of FPOs vary across different institutional and regional contexts, Table 2 presents a comparative synthesis of selected empirical studies from both India and other countries. The table highlights the major functions performed by FPOs and summarises their observed impacts on economies of scale and market access

Although Table 2 concentrates on the economic and market-level outcomes experienced by the FPO members, the results that are shown are not accidental. They are the results of institutional interventions and a systematised package of services provided by FPOs; there are different types of services that are being provided by the FPOs, as shown in Table 3.

So, FPOs act as a multifunctional organisation rather than merely acting as marketing entities, as highlighted in Table 3. The services and functions that are offered include every step of the agricultural value chain, such as marketing, finance, capacity building, input procurement and production aid. Because of this

wide range of services and functions offered by the FPOs, they are nowadays seen as transformative institutional arrangements that can help small and marginal farmers to increase their living standard and overcome structural challenges.

Input and production services, such as purchasing in bulk and collective use of machinery, directly result in a reduction of costs, as well as ensuring the quality of inputs, which ultimately enhances net farm incomes. Whereas through the aggregation of farmers, branding and direct buyer linkages, price realisation and constraints related to market access also get reduced. Also, the dependence on intermediaries declined, which shows lower transaction costs and exploitation risks. Also, with proper financial services and capacity building programs for farmers, they are now able to use improved technologies, manage risks and have greater or improved access to markets. Beyond just economic gains, FPOs also contribute to the rural transformation through social inclusion and climate-responsive practices, which enhance resilience and

**Table 2.** Farmer Producer Organisations (FPOs)– economic and market impacts

| Country  | FPO functions studied                                                                                 | Impact on economies of scale                                                                                      | Impact on market access                                                                                          | Key findings                                                                                                                                                                                                                                                                        | References |
|----------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Uganda   | Functioning of rural producer organisations (RPOs); marketing service provision and collective action | RPOs enable value addition and bulking of produce, leading to improved bargaining power and fixed cost depression | RPOs improve members' access to input and output markets and enable farmers to obtain better prices for produce. | RPOs improve commercialisation by raising prices through bulking and value addition; they face challenges in liquidity, transport, leadership and transparency. Development interventions needed for working capital, information and knowledge dissemination and financial access. | (38)       |
| India    | Input Supply, Technical and informational services and Financial services                             | Reduced seed prices (10–15 %) and equipment costs (~50 %); collective savings                                     | Better prices for produce through informal pooling and reduced dependency on middlemen                           | Improved input access and knowledge; constrained by capital, managerial support and regulations                                                                                                                                                                                     | (12)       |
| Slovakia | Impact of PO membership on farm performance                                                           | FPOs generate economies of scale, benefiting even large farms via cost reductions and better margins              | FPOs improve bargaining power with buyers and input suppliers, facilitating better terms and joint marketing     | PO membership improves farm profitability, value added services, employment and labour productivity. Established POs perform better than new ones.                                                                                                                                  | (39)       |
| Kenya    | Bargaining and processing POs (collective marketing, training, food safety monitoring)                | Improved access to inputs, training and milk storage facilities                                                   | Enabled compliance with food safety standards and access to high-value markets                                   | PO membership significantly increased adoption of food safety measures; processing POs had stronger positive effects than bargaining POs                                                                                                                                            | (40)       |
| India    | Input supply, marketing, financial and networking services and technical support                      | Collective procurement and input supply improved access and reduced costs                                         | Improved market access and networking enabled better linkages and opportunities.                                 | Overall performance ranged from poor to good; leadership, participation, communication and team spirit were key determinants of FPO success                                                                                                                                         | (41)       |
| India    | Input supply, collective marketing, capacity building and networking                                  | Collective input procurement reduced input costs and transaction expenses                                         | Collective marketing, improved bargaining power and enabled better price realisation                             | FPOs strengthened member participation and market linkages, but effectiveness varied depending on governance and institutional support                                                                                                                                              | (36)       |
| Poland   | Product mix and marketing channels                                                                    | Larger POs supply retail chains and highlighting the scale advantage                                              | POs facilitate diversified market channels and including retail chains                                           | POs show high heterogeneity in product mix and distribution channels. POs are in more competitive environments and specialise in fewer products                                                                                                                                     | (42)       |
| India    | Input/output aggregation, credit access, networking and government-linked schemes                     | Collective input procurement and services reduced costs and improved access to resources                          | Enhanced linkages to markets and institutions; improved bargaining strength in the market                        | Growth of FPOs supported by NABARD and SFAC; performance of FPOs varies across states; policy support needed for sustainability                                                                                                                                                     | (30)       |
| Ghana    | Collective marketing, input supply, access to credit and training                                     | Enhanced bargaining power and reduced transaction costs                                                           | Improved output prices and better access to the market for buyers                                                | FPO membership significantly increased smallholder incomes and welfare, though benefits depend on governance and financial sustainability.                                                                                                                                          | (43)       |
| India    | Sustainability factors (Economic, social and environmental)                                           | FPOs lower transaction costs, increase income and enable collective bargaining                                    | FPOs improve market linkages and ensure better prices for produce                                                | Key enabling factors: Improved income, subsidies and collective bargaining.<br>Key inhibiting factors: Capital shortage, weak management, etc.                                                                                                                                      | (20)       |

Sources: Author's own compilation.

**Table 3.** Important services/functions provided by farmer producer organisations

| Broad categories of services                      | Specific services / Functions                                                                                                                          | References  |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Input and production services</b>              | Bulk procurement of seeds, fertilisers, pesticides, machinery; collective use of farm equipment; promoting sustainable practices like CSA/agroecology. | (3, 12,43)  |
| <b>Marketing and market linkages</b>              | Aggregation of produce; collective marketing and branding; direct linkages with buyers, processors, retailers; price discovery and negotiation.        | (3, 30, 37) |
| <b>Financial services</b>                         | Facilitating access to institutional credit; financial literacy; group savings; insurance services.                                                    | (12, 20)    |
| <b>Capacity building and technical support</b>    | Training in improved cultivation, post-harvest handling, record-keeping, digital literacy; exposure visits; advisory services.                         | (36, 43)    |
| <b>Policy advocacy and institutional linkages</b> | Representing farmer interests with government; lobbying for better schemes; building partnerships with NGOs, extension agencies and private firms.     | (36,37)     |
| <b>Social and community development</b>           | Promoting gender inclusion; reducing inequalities; building social capital; resilience building against climate risks and migration pressures.         | (3, 36)     |
| <b>Environmental and sustainability functions</b> | Promoting agroforestry, climate-smart agriculture, soil conservation and eco-friendly inputs.                                                          | (36, 43)    |

Sources: Author's own compilation.

sustainability.

However, now we all know that FPOs offer a wide range of services, but still, their delivery is uneven. Basic economic activities, such as input procurement and purchases, combine marketing, etc., are doing well, but services like financial, policy advocacy and environmental services are typically low and underdeveloped. So, to make FPOs work at full potential, there is a need for proper institutional capability and capacity, as well as external support.

### Benefits of farmer producer organisations

We already discussed about the transformative role of FPOs by analysing their wide range of services and functions through which they influence the production, perception and participation of farmers. So, with this understanding, this section focuses on the benefits of FPOs and Table 4 captures the tangible economic, market-related and institutional outcomes and benefits experienced by member farmers.

#### Economic growth

In India, FPOs have played a key role in promoting the economic growth of small and marginal farmers (6). With the help of FPOs, farmers are now able to gain access to better inputs, markets and technology, which significantly increases farmers' income (44). Similarly, it is also observed that farmers who are members of FPOs have higher incomes than those who are not members (6). All these economic benefits are made even better by the fact that FPOs enable the realisation of economies of scale, lowering the cost of production and maximising efficiency (3, 45).

#### Increased farmers' bargaining power

One of the biggest advantages that a farmer gets from the FPO is increased bargaining power. Because of collectivisation, farmers can easily negotiate for better prices for their produce and reach better

markets (46, 47). The FPOs help their farmers to get a lucrative price for their produce as compared to others (48). Due to collective bargaining, members of the FPO in Telangana receive higher net returns and a higher percentage of consumer rupees (49). According to previous studies, this bargaining power also applies to input procurement, where FPOs help farmers to obtain better prices and deals on seeds, fertilisers and such other inputs which ultimately reduce the production costs and benefit their members even more (50).

#### Knowledge and training

To adopt better farming methods and technology, farmers need proper knowledge and training. The FPOs play an important role by providing them access to new innovative techniques and how to use them through knowledge and training (12). According to recent studies, the FPOs helped farmers by increasing their overall productivity and efficiency by using technical services, weather advisories or forecasting and training on sustainable practices (44). As an example, in Rajasthan, members of FPO reported improved yields and improved economic outcomes because of their learned skills and knowledge sharing. Also, FPOs provide farmers better access to the market and its trends so that they can make better decisions on time (50).

#### Risk mitigation

One of the most important benefits of FPO is that it also prevents farmers from risk exposure, particularly with respect to production risks and market uncertainty (51). So, by providing farmers with proper market information and regular market prices, FPOs can easily reduce their vulnerability to price volatility (35, 52). For example, in Karnataka, FPOs encourage their members to market their produce, i.e. maize collectively, to get a good price for their produce and reduce the vulnerability to market hazards (52). The

**Table 4.** Benefits of Farmer Producer Organisations (FPOs)

| Benefits                         | Description                                                                                    | References   |
|----------------------------------|------------------------------------------------------------------------------------------------|--------------|
| <b>Economic growth</b>           | FPOs increase farmers' incomes through better market access and input efficiency.              | (6, 44)      |
| <b>Bargaining power</b>          | FPOs enhance farmers' ability to negotiate better prices and reduce intermediary exploitation. | (3, 45–47)   |
| <b>Knowledge and training</b>    | FPOs provide training and technical services, improving farming practices and productivity.    | (44, 50)     |
| <b>Risk mitigation</b>           | FPOs reduce market and production risks through stable prices and financial services.          | (35, 52, 53) |
| <b>Efficient market linkages</b> | FPOs streamline market access, eliminating intermediaries and improving profitability.         | (35, 45, 55) |

Sources: Author's own compilation.

FPOs also provide financial and insurance services to their farmers, which further protect them from unforeseen risks (53).

### Efficient market linkages

The FPOs play a crucial role by eliminating intermediaries, streamlining the supply chain and establishing effective market connections for the farmers so that they can receive a larger share of the consumer rupee (35, 49). For example, FPOs in Andhra Pradesh provided their paddy farmers with direct and efficient market linkage or access, increasing their profits and returns (54). Many recognised that FPOs reduce the transaction costs and improve the overall effectiveness of marketing channels (55).

Findings indicate that economic benefits such as improved price realisation, reduced transaction costs and better access to inputs are consistently reported across studies; the extent of these gains depends largely on member participation, institutional maturity and value-chain integration. Evidence also suggests that FPOs delivering multiple services, such as credit facilitation, training and market linkage support, tend to generate more sustained livelihoods compared to those functioning primarily as aggregation platforms. This highlights the importance of strengthening service diversification within FPOs to enhance their long-term effectiveness.

While the literature clearly emphasises the benefits of FPOs, it is also important to examine and look at the actual outcomes that are experienced by farmers through their association with FPOs. Table 5 will provide the evidence on the effects of farmers' association with FPOs across important outcome variables.

Table 5 indicates that economic outcomes such as improved income, better price realisation, reduced cost of cultivation and enhanced market access are the most consistently reported benefits across studies. Institutional services such as training, extension support and access to credit also emerge as important enabling factors that strengthen farmer participation in markets. However, outcomes related to social trust and organisational sustainability show mixed results, suggesting that the long-term effectiveness of

FPOs depends largely on governance quality, member participation and the availability of infrastructure support. These findings indicate that while short-term economic gains are widely observed, broader institutional and social impacts vary across contexts and stages of FPO development.

### Challenges faced by Farmer Producer Organisations

The FPOs have already shown significant success in improving the incomes of smallholder farmers, access to markets and the socio-economic life of farmers in general (6, 58). However, most of the literature highlighted that in many states and business frameworks, the full potential of FPOs is not utilised and that is because of numerous problems that continue to exist. Financial, institutional, operational market and policy barriers often create an imbalance between anticipated and actual benefits (59, 60).

#### Financial constraints and limited working capital

Inadequate working capital and institutional financing mechanisms are one of the most persistent and documented problems that FPOs face (3). Mostly small FPOs that have recently been founded struggle to raise sufficient funds because of a lack of resources and the lack of financial ability of FPOs. This has a direct impact on most crucial aspects of operations, i.e. the acquisition of inputs, the storage facilities, value addition and the inability to pay farmers on time (61). As a result, lots of FPOs heavily rely on the government for funding and financial support without even developing their strong internal financial structures. Because of this dependence, FPOs are vulnerable to failure and there exists a substantial sustainability gap in the FPO model (58, 59, 62).

#### Marketing and infrastructure deficiencies

The remote locations of the regulated mandis, high costs of transportation and a poor market information system often face market-related problems and make FPOs difficult to enter lucrative markets (61). Price volatility and periodic shortages put the farmers at risk of volatile returns, whereas branding, product differentiation and certifications are still underdeveloped in most of the FPOs

**Table 5.** Benefits and impact of association with Farmer Producer Organisations (FPOs)

| Category and types of benefits                                                                              | Effect       | References           |
|-------------------------------------------------------------------------------------------------------------|--------------|----------------------|
| Income enhancement<br>(higher farm income, more stable prices and reduced income fluctuations)              | Positive (+) | (14, 43, 51, 56)     |
| Market access and bargaining power<br>(collective sales, better prices and reduced dependency on middlemen) | Positive (+) | (12, 14, 51, 56, 57) |
| Reduced cost of cultivation<br>(bulk input purchase, collective bargaining and lower transaction costs)     | Positive (+) | (13, 14, 16, 56, 57) |
| Technical support and extension services<br>(training, knowledge and access to modern technologies)         | Positive (+) | (12, 15, 56)         |
| Social empowerment<br>(inclusion, women's participation and skill building)                                 | Positive (+) | (13, 20, 33, 43)     |
| Access to credit/finance<br>(collective loans, easier credit and microfinance)                              | Positive (+) | (16, 43, 51, 56)     |
| Production quality<br>(better inputs, adoption of quality practices and value addition)                     | Positive (+) | (14, 16, 51)         |
| Yield improvement<br>(efficient production methods and increased yield)                                     | Positive (+) | (14, 57)             |
| Environmental practices<br>(resource management, resilience to climate change and conservation)             | Positive (+) | (20, 51)             |
| Food security and nutrition<br>(dietary diversity and reduced food insecurity)                              | Positive (+) | (43)                 |
| Social trust<br>(member cohesion, stability and mutual aid)                                                 | Mixed        | (16, 37, 56)         |
| Infrastructure development<br>(storage, processing and logistics)                                           | Positive (+) | (14, 57)             |
| Stability and organisation lifespan                                                                         | Mixed        | (14, 56, 57)         |

Sources: Author's own compilation.

(60, 63). In the case of perishable goods, there is often a lack of storage facilities and infrastructure; because of this, farmers are unable to store their produce and are forced to sell immediately (64).

### **Managerial and human resource challenges**

Lack of trained personnel in the management and poor governance practices by the board members pose challenges in proper planning, negotiating and executing activities (64). Ineffective dominance of some elected leaders, low young participation and lack of succession planning minimise innovation and inclusivity (27, 65). The entrepreneurial abilities within the members and the Board of Directors may be lacking (41).

### **Low member participation**

Another major challenge that FPOs face is the active participation of members in different activities, such as decision-making and collective marketing, which ultimately decreases collective bargaining power and inhibits scale economies (60). It has also been noted that internal rivalries related to leadership positions, lack of team spirit and mistrust among members have been affecting the ultimate objective of the organisation (3, 12). Also, marginal and resource-poor farmers have very limited financial capacity and assets with them. So, a small amount of equity can be burdensome for them and this burden can restrict their ability to participate in organisations or institutional arrangements (48).

### **Operational and policy constraints**

Statutory licenses to sell inputs or processed products are also difficult to obtain and renew, which also interferes with the operational activities (61). Most of the FPOs that are small cannot afford to undergo organic and quality certifications due to their complex and expensive nature (63). Not only this, but delays in the government scheme payment and inconsistent handholding after the first or initial funding of the project also influence the sustainability. Although the government made certain policies to promote the formation of many FPOs, there is often less focus on long-term viability, market integration and product diversification (64).

The literature collectively indicated that financial constraints, weak governance structures and limited managerial capacity remain the most persistent barriers affecting FPO sustainability across developing country contexts. These challenges are often interrelated, as inadequate working capital restricts operational expansion, while limited professional management weakens market engagement and member participation. This suggests that strengthening institutional capacity alongside improving access to finance is critical for ensuring the long-term viability of FPOs.

### **Policy interventions for strengthening Farmer Producer Organisations**

The sustainability and effectiveness of FPOs rely heavily on the enabling policy environment. Indian and other similar situations demonstrate that policy interventions can be grouped into four areas: financial support, governance and legal framework, market and value chain policies and capacity building and technology transfer.

We all know that financial support plays a major role in the growth of FPOs by creating the first capital base and operational sustainability. The infrastructure, e.g., storage, processing and collective procurement facilities, is often supported with subsidies and grants, but sometimes it is not enough to be long-term sustainable (3, 12). Collective organisations such as FPOs increase access to institutional credit through collateralisation. Research from India

shows that access to credit increases the bargaining power of farmers and their ability to invest in new technologies (30). The legal status through different structures like producer companies in India has enabled access to state support, formal markets, but the successful results are based on democratic governance, transparent decisions, professional management and member trust (37). Experiences from comparative contexts further indicate and suggest that inclusive participation might be restrained by the promotion led by the state without reinforcing its internal democratic procedures (43).

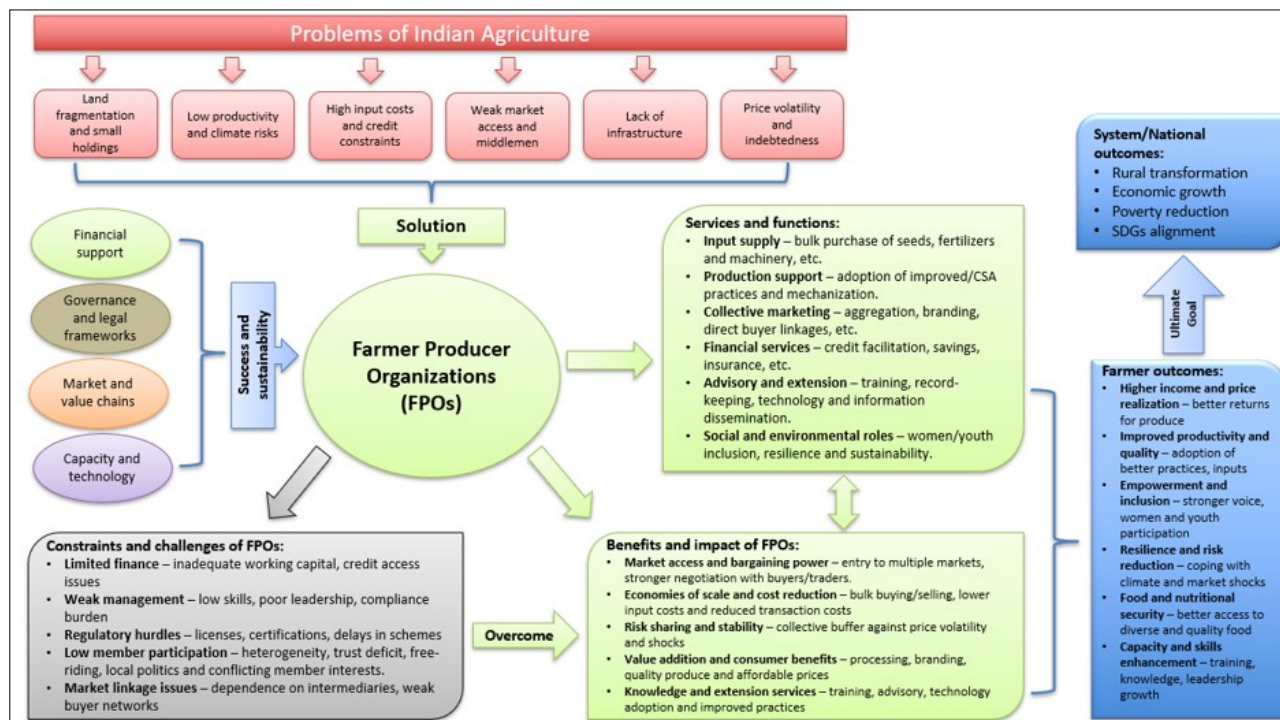
From the studies, it has been demonstrated that collective marketing, along with state-assisted buying, can lower the transaction costs, enhance price discovery and allow involvement in more valuable supply chains. (30, 58, 66). The policies of market integration and capacity-building are also very important in the determination of FPOs' performance (67). Meanwhile, long-term investments in capacity building, such as post-harvest management, financial literacy and professional leadership, are very important to increase organisational viability and technology adoption (20, 36, 41).

Overall, the evidence suggests that policy interventions are most effective when financial assistance, capacity-building support and market integration strategies are implemented in a coordinated manner rather than as isolated initiatives. Experiences from India demonstrate that structured institutional support mechanisms, such as cluster-based facilitation models and targeted credit access programmes, significantly enhance the operational sustainability of FPOs. This highlights the need for integrated policy frameworks that simultaneously address financial, organisational and market-related constraints. Such interventions are particularly important for newly formed FPOs that face constraints related to managerial capacity, infrastructure access and financial sustainability during early stages of institutional development.

A conceptual framework of how FPOs can be an institutional solution to the key structural limitations facing Indian agriculture, such as land fragmentation, poor market access, credit constraints and inadequate infrastructure, is depicted in Fig. 1. The framework identifies the role played by facilitating factors like financial resources, governance systems, value-chain integration and capacity-building interventions in the sustainability of FPOs and enhances their service delivery roles. These services, including collective marketing, provision of inputs, advisory services and financial facilitation, lead to better farmer-level results such as increased income, productivity, risk mitigation and social inclusion, which in turn lead to better system-level outcomes such as rural transformation, economic growth and poverty reduction. The framework incorporates the findings of the literature reviewed and offers a unified expression of the channels through which FPOs would help in the realisation of an inclusive agricultural development.

### **Way forward**

The FPOs have the potential to revolutionise smallholder agriculture. It is found that these are effective institutional mechanisms for linking small farmers to the external world and help them to reap many tangible and intangible benefits, including improved market access, better quality and price realisation for the produce and reduced risk. But, only establishing more FPOs will not serve the purpose until efforts are made to sustain them. Several financial, governance and capacity constraints need to be overcome first. From a research point of view, thorough assessments of initiatives like the 10000 FPO scheme are required and comparative studies are needed to examine how gender dynamics, regional contexts and



**Fig. 1.** Conceptual framework of Farmer Producer Organisations (FPOs) (Source: Author's own compilation).

governance structures influence outcomes. From a policy perspective, enabling frameworks of FPOs should prioritise lowering transaction costs, simplifying compliance requirements and setting up reliable monitoring systems. To stay resilient, there is a need for competent management in the FPOs. The board members should know the operations and different activities of FPOs. Also, they must be innovative and adaptable to the latest technologies. Additionally, women, youth and marginalised farmers should also be involved in decision-making and other activities. Collectively, the way forward depends upon building resilient, adaptive and equitable institutions that integrate smallholders into dynamic agri-food systems while meeting and accomplishing the national objectives for food security and sustainability. Also, future research should focus on comparative regional assessments, governance-performance linkages and longitudinal evaluation of national FPO promotion programmes to better understand the institutional conditions required for scaling successful collective action models.

## Conclusion

Farmer Producer Organisations (FPOs) have become significant institutional arrangements to empower the economic status of small and marginal farmers by increasing price realisation, cutting transaction costs, raising bargaining power and increasing accessibility to inputs, services and markets. Evidence from India and international experiences shows that while FPOs generate significant benefits through aggregation, collective marketing and capacity building support their performance remains constrained by limitations related to working capital, governance quality, infrastructure availability and managerial capacity. The review contributes to the literature by providing a comparative and thematic synthesis of evidence on the functions, benefits and constraints of FPOs across different institutional contexts and by highlighting the role of enabling ecosystems, including financial support mechanisms, government strengthening and digital interventions in improving their effectiveness. These findings have

important implications for policymakers, development agencies and promoting institutions to design targeted support strategies that enhance the sustainability and performance of FPO-led interventions. Further studies are needed to conduct longitudinal measures of FPO performance, a comparative analysis of the performance of different commodity-specific and region-specific models, inclusive participation outcomes of different genders and how digital platforms enhance the effectiveness of collective marketing systems. Such studies can help build more evidence that can be used to design context-specific policies to empower FPOs as long-term agents of inclusive rural transformation.

## Acknowledgements

The author thanks the faculty of the Department of Agribusiness Management, Dr Y.S. Parmar University of Horticulture and Forestry, Solan, Himachal Pradesh, for their invaluable guidance, support and encouragement throughout the preparation of this paper. Gratitude is also extended to peers and fellow researchers for their thoughtful discussions and constructive feedback, which greatly enhanced the quality of this work.

## Authors' contributions

KS<sup>1</sup> conceptualised the study, conducted the literature review, synthesised the evidence and drafted the final and original manuscript. KS<sup>2</sup> contributed substantially to manuscript development, revisions, helped refine arguments and overall coordination. RC and YJ provided academic guidance, critically reviewed the manuscript, and contributed to improving its structure and clarity. ST and YS provided intellectual inputs to strengthen the manuscript. All the authors read and approved the final manuscript [KS<sup>1</sup>- Kartike Sharma and KS<sup>2</sup>- Kajal Sharma].

## Compliance with ethical standards

**Conflict of interest:** Authors do not have any conflict of interests to declare.

**Ethical issues:** None

## References

- Gautam S, Mallaiah LC. Enhancing farmers' income and farmer producer organisations (FPOs) in India. *Saudi J Econ Fin.* 2024;8:91–101. <https://doi.org/10.36348/sjef.2024.v08i04.001>
- Nikam V, Veesam H, Kiran Kumara TM, Chand P. Farmer producer organisations in India: challenges and prospects (policy paper 40). New Delhi: ICAR–National Institute of Agricultural Economics and Policy Research; 2023.
- Malik S, Kajale D. Empowering small and marginal farmers: unveiling the potential and addressing obstacles of farmer-producer organisations in India. *Res World Agric Econ.* 2024;5:32–47. <https://doi.org/10.36956/rwae.v5i1.994>
- Taraz V. Adaptation to climate change: historical evidence from the Indian monsoon. *Environ Dev Econ.* 2017;22:517–45. <https://doi.org/10.1017/S1355770X17000195>
- Jayalath MM, Ratnayake RMC, Perera HN, Thibbotuwawa A. Waste minimisation and performance improvement in vegetable supply chains: a case study from a developing economy. In: *Proceedings of the 8th International Conference on Business and Industrial Research (ICBIR); 2023; Bangkok, Thailand.* Piscataway (NJ): IEEE; 2023. p. 948–53. <https://doi.org/10.1109/ICBIR57571.2023.10147413>
- Gurung R, Choubey M, Rai R. Economic impact of farmer-producer organisation (FPO) membership: empirical evidence from India. *Int J Soc Econ.* 2023;51:1015–28. <https://doi.org/10.1108/IJSE-06-2023-0451>
- Gangwar LS, Hasan SS, Prakash B, Sharma AK, Singh K, Pathak AD. Farmer-Producer Organisations and innovative policy options for enhancing farmers' income in India. *Int J Agric Manag.* 2022;36:51–63. <https://doi.org/10.5958/2456-8716.2022.00004.5>
- Khan MA, Pratap J, Siddique RA, Gedam PM. Farmer producer organisation (FPO): empowering Indian farming community. *Int J Curr Microbiol Appl Sci.* 2020;11:2089–99.
- National Sample Survey Organisation (NSSO). Situation assessment of agricultural households and land and holdings of households in rural India: NSS 77<sup>th</sup> round. New Delhi: Ministry of Statistics and Programme Implementation, Government of India; 2019.
- Beg S. Digitisation and development: property rights security, and land and labour markets. *J Eur Econ Assoc.* 2022;20:395–429. <https://doi.org/10.1093/jeea/jvab034>
- Bhanot D, Kathuria V, Das D. Can institutional innovations in agri-marketing channels alleviate distress selling? Evidence from India. *World Dev.* 2021;137:105202. <https://doi.org/10.1016/j.worlddev.2020.105202>
- Bikkina N, Turaga RMR, Bhamoriya V. Farmer producer organisations as farmer collectives: a case study from India. *Dev Policy Rev.* 2018;36:669–687. <https://doi.org/10.1111/dpr.12274>
- Harikrishna YV, Hansdah P, Sharma NR. Farmer's producer organisation (FPO) – collective steps towards lucrative agriculture. *Asian J Agric Ext Econ Sociol.* 2022;40:60–65. <https://doi.org/10.9734/ajaees/2022/v40i230846>
- Mukherjee A, Singh P, Ray M, Satyapriya S, Burman RR. Enhancing farmers' income through farmers' producer companies in India: status and roadmap. *Indian J Agric Sci.* 2018;88:1151–61. <https://doi.org/10.56093/ijas.v88i8.82441>
- Dhamija A, Dhamija S, Khan W. A review on farmer-producer organisation: challenges and opportunities for farmers' growth. *NeuroQuantology.* 2022;20:104–109. <https://doi.org/10.14704/NQ.2022.20.12.NQ77011>
- Gorai SK, Wason M, Padaria RN, Rao DUM, Paul RK. Factors contributing to the stability of the farmer-producer organisations: a study in West Bengal. *Indian J Ext Educ.* 2022;58:91–96. <https://doi.org/10.48165/IJEE.2022.58218>
- Kumari S, Tripathy KK, Bharti N. Strengthening agriculture value chain through collectives: comparative case analysis. *Int J Rural Manag.* 2021;17:40S–68S. <https://doi.org/10.1177/0973005221991438>
- Mourya M, Mehta M. Farmer producer company: India's magic bullet to realise select SDGs? *Int J Rural Manag.* 2021;17:115S–147S. <https://doi.org/10.1177/0973005221991660>
- Prabhakar I, Manjunatha BL, Nithyashree ML, Hajong D. Farmers producer company—an innovative farmers' institution. *Environ Ecol.* 2012;30:427–30.
- Suresh V, Sreejith SS. Enabling and inhibiting factors of the sustainability of farmers' producer organisations in India. *Discov Sustain.* 2024;5:333. <https://doi.org/10.1007/s43621-024-00527-5>
- Rashtrapal BR, Mathur A, Beniwal A. Farmer producer organisations in Maharashtra: prospects and challenges. *Asian J Agric Ext Econ Sociol.* 2022;40:203–218. <https://doi.org/10.9734/ajaees/2022/v40i111702>
- Rana RK, Kaur R, Singh R, Shirur M, Padaria RN, Monga S, et al. A critical review and SWOT analysis of important extension agencies in India for improving extension management. *Agric Rev.* 2023;44:441–50. <https://doi.org/10.18805/ag.R-2522>
- Shree DAN, Vaishnavi P. Challenges faced by farmer-producer organisations (FPOs) – a review. *J Agric Ext Manag.* 2022;23:131–140.
- Momin S, Dwivedi S. Farmer producer organisations (FPOs): a scheme for transforming the agricultural sector of India. *Asia Pac J Manag.* 2024;4:11–16. <https://doi.org/10.46977/amt.2024.v04i04.002>
- Department of Agriculture & Cooperation. Policy and process guidelines for FPOs. New Delhi: Government of India; 2013.
- Qiu Y, Zeng X, Zhang L, Wu J, Bai Y. Impact of farmer cooperatives on labour employment: evidence from rural China. *Land.* 2024;13:2242. <https://doi.org/10.3390/land13122242>
- Ma W, Rahut DB, Marini MA. Farmers' organisations and sustainable development: an introduction. *Ann Public Coop Econ.* 2023;94:683–700. <https://doi.org/10.1111/apce.12449>
- Arahant A, Nayak D, Jindal L, Batra G, Dash DN, Kondasani RKR, et al. Farmer producer organisation: an ecosystem for building socio-economic resilience of farmers in India. *Curr Agric Res J.* 2025;13:261–73. <https://doi.org/10.12944/CARJ.13.1.26>
- Ortiz R, Peris J. The role of farmers' umbrella organisations in building transformative capacity around grassroots innovations in rural agri-food systems in Guatemala. *Sustainability.* 2022;14:2695. <https://doi.org/10.3390/su14052695>
- Agarwal S, Goyal SK. Progression of farmer-producer organisations in India. *Indian J Agric Sci.* 2022;92:1490–1495. <https://doi.org/10.56093/ijas.v92i12.118068>
- Prabhavathi Y, Kishore NTK, Ramachandra CT, Siddayya S. An analytical study on managerial competencies and business performance of farmer producer organisations (FPOs): a value chain perspective from India. *Millennial Asia.* 2023. <https://doi.org/10.1177/09763996231200180>
- Joshi S, Sharma M, Singh RK. Sustainable agri-food supply chain practices: few empirical evidences from a developing economy. *Glob Bus Rev.* 2023;24:451–74. <https://doi.org/10.1177/0972150920907014>
- Harrington T, Narain N, Rao N, Rengalakshmi R, Sogani R, Chakraborty S, et al. A needs-based approach to promoting gender equity and inclusivity: insights from participatory research with farmer-producer organisations (FPOs). *J Soc Econ Dev.* 2024;26:409–434. <https://doi.org/10.1007/s40847-023-00280-x>
- Abdu A, Marquis GS, Colecraft EK, Doodoo ND, Grimard F. The

- association of women's participation in farmer-based organisations with female and male empowerment and its implications for nutrition-sensitive agriculture interventions in rural Ghana. *Curr Dev Nutr*. 2022;6:121. <https://doi.org/10.1093/cdn/nzac121>
35. Parthiban SR, Nain MS, Singh R, Kumar S, Chahal VP. Farmers' producer organisation in reducing transactional costs: a study of Tamil Nadu Mango Growers Federation (TAMAFED). *Indian J Agric Sci*. 2015;85:1303–1307. <https://doi.org/10.56093/ijas.v85i10.52269>
  36. Covey J, Macqueen D, Bolin A, Hou Jones X. Co-producing knowledge: a demand-led, prosperity-focused, research agenda with forest and farm producer organisations. *Environ Sci Policy*. 2021;124:336–347. <https://doi.org/10.1016/j.envsci.2021.07.006>
  37. Chlebicka A. Producer organisations in agriculture—barriers and incentives of establishment on the Polish case. *Procedia Econ Finance*. 2015;23:976–81. [https://doi.org/10.1016/S2212-5671\(15\)00406-2](https://doi.org/10.1016/S2212-5671(15)00406-2)
  38. Latynskiy E, Berger T. Networks of rural producer organisations in Uganda: what can be done to make them work better? *World Dev*. 2016;78:572–86. <https://doi.org/10.1016/j.worlddev.2015.10.014>
  39. Michalek J, Ciaian P, Pokrivcak J. The impact of producer organisations on farm performance: the case study of large farms from Slovakia. *Food Policy*. 2018;75:80–92. <https://doi.org/10.1016/j.foodpol.2017.12.009>
  40. Mwambi M, Bijman J, Mshenga P, Oosting S. Adoption of food safety measures: the role of bargaining and processing producer organisations. *NJAS Wagening J Life Sci*. 2020;92:100337. <https://doi.org/10.1016/j.njas.2020.100337>
  41. Amitha CD, Savitha B, Rani VS, Laxminarayana P. Factors contributing to the performance of farmer producer organisations (FPOs): a study in Medak district of Telangana state. *Int J Bio-Resour Stress Manag*. 2021;12:192–98. <https://doi.org/10.23910/1.2021.2226>
  42. Falkowski J, Chlebicka A. What product mix do they offer and what marketing channels do they use? Exploring agricultural producer organisations' heterogeneity. *J Rural Stud*. 2021;85:1–12. <https://doi.org/10.1016/j.jrurstud.2021.05.002>
  43. Addai KN, Ng'ombe JN, Temoso O. Can farmer organisation membership improve household food security and nutrition? Evidence from Northern Ghana. *World Food Policy*. 2024;10:180–202. <https://doi.org/10.1002/wfp2.12076>
  44. Das S, Singh R. Benefits of new generation farmers' collectives: case reflection from an eastern state of India. *Dev Pract*. 2024;34:736–56. <https://doi.org/10.1080/09614524.2024.2345733>
  45. Nikam V, Singh P, Ashok A, Kumar S. Farmer producer organisations: innovative institutions for upliftment of small farmers. *Indian J Agric Sci*. 2019;89:1383–92. <https://doi.org/10.56093/ijas.v89i9.93451>
  46. Neupane H, Paudel KP, He Q. Impact of cooperative membership on market performance of Nepali goat farmers. *Ann Public Coop Econ*. 2023;94:805–830. <https://doi.org/10.1111/apce.12445>
  47. Sorrentino A, Cacchiarelli L, Russo C. Market power and bargaining power in the EU food supply chain: the role of producer organisations. *New Medit*. 2018;17:21–31. <https://doi.org/10.30682/nm1804b>
  48. Sharma P. Leveraging farmer producer organisations to boost production, mitigate risk and strengthen food security: lessons and challenges. *J Land Rural Stud*. 2013;1:41–48. <https://doi.org/10.1177/2321024913487270>
  49. Kumar P, Manaswi BH, Prakash P, Anbukkani P, Kar A, Jha G, et al. Impact of farmer-producer organisation on organic chilli (*Capsicum frutescens*) production in Telangana, India. *Indian J Agric Sci*. 2019;89:1850–54. <https://doi.org/10.56093/ijas.v89i11.95313>
  50. Chowdary CHM, Shanthasheela M, Rajasekharan R, Vasanthi R. Assessing the performance of farmer-producer organisations: a study in Prakasam district of Andhra Pradesh, India. *Asian J Agric Ext Econ Sociol*. 2022;40:351–57. <https://doi.org/10.9734/ajaees/2022/v40i1031081>
  51. Bizikova L, Nkonya E, Minah M, Hanisch M, Turaga RMR, Speranza CI, et al. A scoping review of the contributions of farmers' organisations to smallholder agriculture. *Nat Food*. 2020;1:620–630. <https://doi.org/10.1038/s43016-020-00164-x>
  52. Basavaraj GL. Do institutional interventions benefit farmers? Evidence from marketing maize through a farmer-producer organisation in Davangere district of Karnataka. *Econ Aff*. 2022;67:361–69. <https://doi.org/10.46852/0424-2513.3.2022.29>
  53. Santhosha SG, Anuradha CK, Arunkumar M. A conceptual study on the role of farmer-producer organisation in measurement, evaluation and enhancement of sustainable agricultural effectiveness. *Int J Health Sci*. 2022;6:2990–95. <https://doi.org/10.53730/ijhs.v6ns6.9973>
  54. Pujitha AS, Naik A, Kumar A, Biswas T. Comparative analysis of the impact of FPO on paddy farmers through canonical correlation analysis. *Indian J Ext Educ*. 2024;60:49–53. <https://doi.org/10.48165/ijee.2024.60310>
  55. Gersch I. Producer organisations and contract farming: a comparative study of smallholders' market strategies in South India. *Z Wirtschgeogr*. 2018;62:14–29. <https://doi.org/10.1515/ZFW-2017-0026>
  56. Singh G, Budhiraja P, Vatta K. Sustainability of farmer-producer organisations under agricultural value networks in India: a case of Punjab and Gujarat. *Indian J Agric Econ*. 2018;73:370–85.
  57. Chopra S, Sekhon MK, Kaur A. What drives farmer-producer organisations (FPOs) towards success or failure in Punjab: evidence and implications. *Indian J Econ Dev*. 2024;20:2403329–2403335. <https://doi.org/10.35716/IJED-24083>
  58. Lalitha N, Viswanathan PK, Vinayan S. Institutional strengthening of farmer-producer organisations and empowerment of small farmers in India: evidence from a case study in Maharashtra. *Millennial Asia*. 2024;15:278–99. <https://doi.org/10.1177/09763996221098216>
  59. Trivedi PK, Ali M, Satpal. Farmer producer organisations in North India: potentials and challenges. *Int J Rural Manag*. 2023;19:379–98. <https://doi.org/10.1177/09730052221107730>
  60. Verma AK, Singh VK, Asha K, Dubey SK, Verma AP. Constraints perceived by the members and non-members towards the functioning of FPO-AKPL in Kannauj district of Uttar Pradesh. *Econ Aff*. 2021;66:335–41. <https://doi.org/10.46852/0424-2513.2.2021.20>
  61. Tiwari N, Upadhyay R. Constraints faced by the functionaries of farmer-producer organisations. *Indian J Ext Educ*. 2022;58:127–31. <https://doi.org/10.5958/2454-552X.2022.00016.0>
  62. Verma S, Sonkar VK, Kumar A, Roy D. Are farmer-producer organisations a boon to farmers? Evidence from Bihar, India. *Agric Econ Res Rev*. 2019;32:123–37. <https://doi.org/10.5958/0974-0279.2019.00022.3>
  63. Pallavi GL, Saxena A, Pastakia A, Oza S. Farmer producer organisations (FPOs) as sustainable transition intermediaries: insights from India. *Int J Rural Manag*. 2024;20:1–18. <https://doi.org/10.1177/09730052241292979>
  64. Verma AK, Singh AK, Dubey SK, Singh OP, Doharey RK, Bajpai V. Constraints faced by board of members of farmer-producer organisations. *Indian J Ext Educ*. 2020;56:75–78. <https://doi.org/10.5958/2454-552X.2020.00012.2>
  65. Zheng S, Awokuse TO, Wang Z. Determinants of producers' participation in agricultural cooperatives: evidence from Northern China. *Appl Econ Perspect Policy*. 2012;34:167–86. <https://doi.org/10.1093/aep/ppr044>
  66. Cabral S, Mahoney JT, McGahan AM, Potoski M. Value creation and value appropriation in public and nonprofit organisations. *Strateg*

Manag J. 2019;40:465–75. <https://doi.org/10.1002/smj.3008>

67. Zhu X, Wang G. Impact of agricultural cooperatives on farmers' collective action: a study based on the socio-ecological system framework. *Agriculture*. 2024;14:96. <https://doi.org/10.3390/agriculture14010096>

### Additional information

**Peer review:** Publisher thanks Sectional Editor and the other anonymous reviewers for their contribution to the peer review of this work.

**Reprints & permissions information** is available at [https://horizonpublishing.com/journals/index.php/PST/open\\_access\\_policy](https://horizonpublishing.com/journals/index.php/PST/open_access_policy)

**Publisher's Note:** Horizon e-Publishing Group remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

**Indexing:** Plant Science Today, published by Horizon e-Publishing Group, is covered by Scopus, Web of Science, BIOSIS Previews, Clarivate Analytics, NAAS, UGC Care, etc See [https://horizonpublishing.com/journals/index.php/PST/indexing\\_abstracting](https://horizonpublishing.com/journals/index.php/PST/indexing_abstracting)

**Copyright:** © The Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited (<https://creativecommons.org/licenses/by/4.0/>)

**Publisher information:** Plant Science Today is published by HORIZON e-Publishing Group with support from Empirion Publishers Private Limited, Thiruvananthapuram, India.