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Editorial: Regenerative agriculture and support in changing policy environments: farmers' rights, contract farming, and navigating towards sustainable practices

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Editorial on the Research Topic
Regenerative agriculture and support in changing policy environments: farmers' rights, contract farming, and navigating towards sustainable practices

The global agri-food system stands at a critical juncture, confronted by the intersecting pressures of climate change, biodiversity loss, resource scarcity, and persistent socio-economic inequities. The imperative to transition from conventional production models to systems that are not only economically viable but also environmentally sustainable and socially just has never been more urgent. This transformation demands a holistic approach, integrating top-down policy frameworks with bottom-up, on-the-ground innovations that empower the farmers at the heart of the system. This Research Topic brings together a collection of studies from diverse global contexts—spanning Asia, Africa, and Europe—to explore the multifaceted pathways toward building more resilient, equitable, and sustainable agri-food systems. The contributing articles illuminate the complex interplay between governance, farmer behavior, collaborative ecosystems, and consumer perspectives that will define the future of food and agriculture (Figure 1).

The critical role of policy and governance

Effective governance is the bedrock upon which sustainable agricultural practices are built. The articles in this Research Topic demonstrate that while policy is a powerful driver of change, its success hinges on design, motivation, and implementation. Exploring the global landscape of non-state governance, Shalom et al. analyze public sector involvement in Voluntary Sustainability Standards (VSSs) and Multi-Stakeholder Initiatives (MSIs)

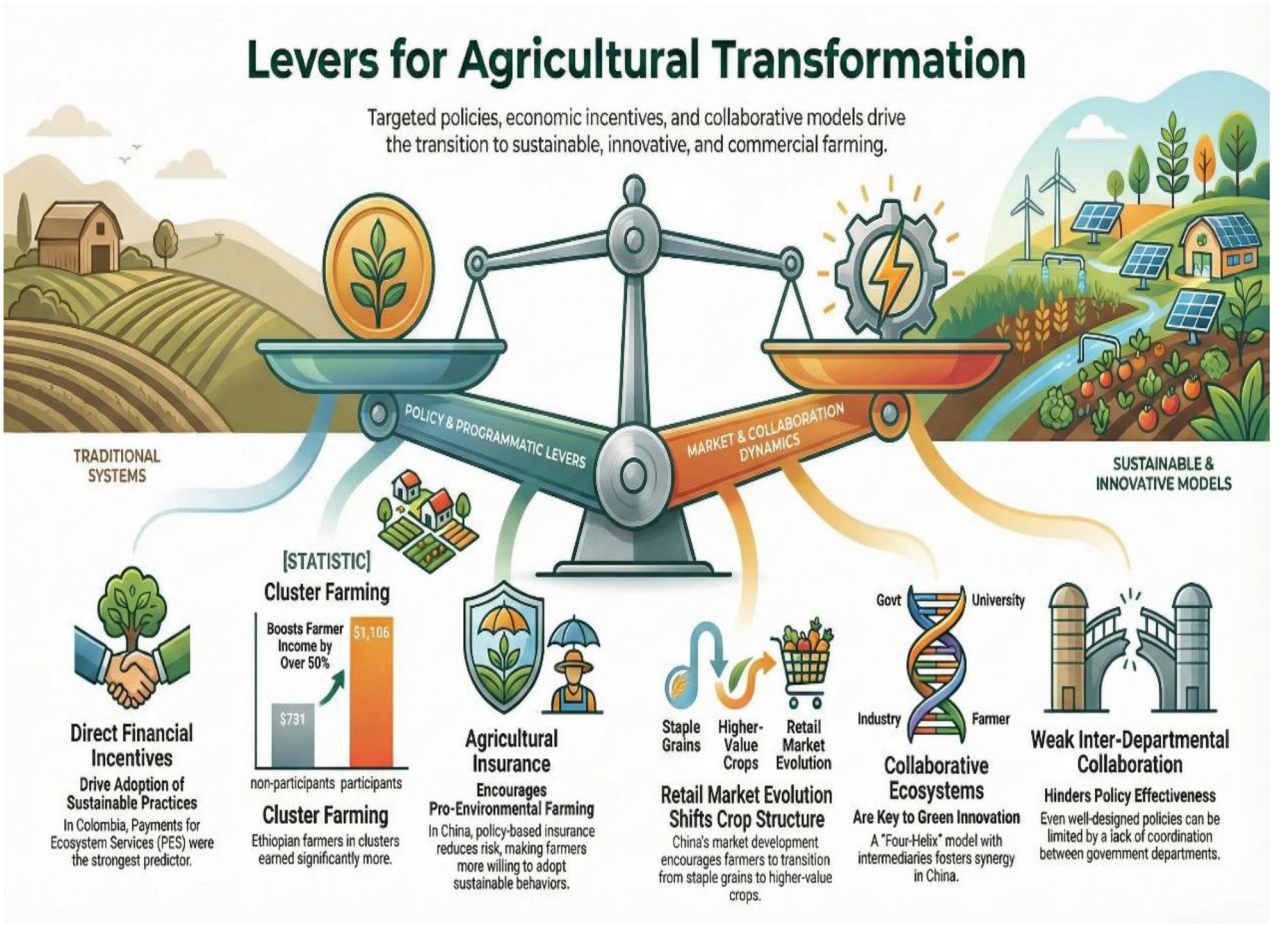

FIGURE 1
Levers for Agricultural Transformation. A synthesis of the primary drivers explored in this Research Topic, illustrating the balance between policy mechanisms (left) and market dynamics (right). The schematic highlights key findings from the contributing articles, including the economic impact of cluster farming, the role of agricultural insurance in derisking sustainable adoption, and the necessity of collaborative ecosystems (the "Four-Helix" model) to bridge the gap between traditional systems and innovative, commercial agriculture.

from a biodiversity perspective. Their findings reveal that until recently, governments' primary motivations were economic or food safety-related rather than ecological. The post-2020 EU "European Green Deal," which leverages organic farming as a central policy tool, signals a crucial shift toward prioritizing biodiversity, yet its focus on a single VSS risks overlooking other valuable agroecological methods.

At the national level, Su et al. provide a quantitative evaluation of China's crop structure optimization policies, crucial for ensuring food security. Using a PMC-Index model, they find that while policies show a positive upward trend in quality, significant room for improvement remains in developing flexible incentive mechanisms, strengthening interdepartmental collaboration, and enhancing technological support. Zooming in on a specific policy instrument, Li et al. investigate how policy-based agricultural insurance in China's Jiangxi Province influences farmers' willingness to adopt pro-environmental production behaviors. Their research confirms that insurance serves as a potent incentive for practices like reduced fertilizer use and organic farming, with the effect mediated by farmers' planting scale and risk attitudes. Together, these studies underscore that effective policy must be multi-layered, well-coordinated, and precisely targeted to influence farmer decision-making.

Fostering innovation and empowering farmer livelihoods

Beyond policy, the success of agricultural transformation depends on the adoption of innovative farming models and the cultivation of farmer entrepreneurship. In Northwestern Ethiopia, Gidelew et al. assess the impact of cluster farming on smallholder commercialization. Their findings show a clear positive association, with participants earning significantly higher incomes and selling a greater proportion of their crops. This model of collective farming on adjacent lands enhances productivity, market linkages, and bargaining power, offering a scalable strategy for transforming subsistence agriculture.

A different approach is explored by Xi et al. in Laifeng County, China, who examine the link between ecological specialty industries

and farmers' livelihoods. Their case study of the local vine tea industry reveals that capitalizing on unique regional resources can dramatically increase farmer incomes, particularly for higher-income participants who possess greater livelihood capital. This highlights the potential of niche, high-value industries to drive rural revitalization. At the individual level, the entrepreneurial spirit of farmers is a key enabler of growth. Thakur et al. delve into the entrepreneurial behavior of polyhouse vegetable growers in India, identifying leadership ability, planning, and innovativeness as core traits. Factors such as farm income, experience, and access to extension services were found to be significantly correlated with these behaviors, pointing to the need for support systems that nurture these essential skills.

Building collaborative ecosystems for sustainable change

Innovation in agriculture does not happen in a vacuum; it requires a robust ecosystem of collaboration. Proposing a novel framework, Chen and Li introduce a "Four-Helix + Intermediary" model for green agriculture, comprising government, academia, industry, and farmers, with intermediaries playing a crucial coordinating role. Their case study of the soapberry industry in China demonstrates that this synergistic model is effective for driving rural development, though its collaborative harmony can be further optimized.

The vital function of intermediaries is further detailed by Cai et al. in their study on land conservation in China. They find that land intermediary organizations, such as cooperatives and legal institutions, positively influence farmers' willingness to conserve cultivated land by enhancing the stability of their land tenure. Interestingly, they also note that farmers with higher human and social capital are less dependent on these intermediaries, suggesting that interventions must be tailored to farmers' existing capacities. These studies collectively argue for a systems-level approach where interconnected actors work in concert to facilitate knowledge transfer, resource sharing, and risk mitigation.

Connecting producers and consumers through fairness

Ultimately, a sustainable food system must be one that is perceived as fair by all its participants, including the end consumer. Mouchtaropoulou et al. investigate consumer perceptions of fairness and sustainability in the agri-food chains of five Mediterranean countries. Their research uncovers a stark disconnect: an overwhelming 87% of consumers believe the current revenue distribution—where farmers receive an estimated 15% of the final price—is unfair. A choice experiment centered on olive oil revealed strong consumer preferences for products that are local, traditionally farmed, produced by family companies, and reflect a fair price for their quality. This indicates a powerful, market-driven demand for transparency and equity that, if harnessed, could realign value chains to better reward producers.

In conclusion, the articles presented in this Research Topic paint a comprehensive picture of the complex, interconnected challenges and opportunities in building sustainable and equitable agri-food systems. There is no single solution; rather, progress requires a dynamic interplay of targeted governance, farmer-centric innovation, robust collaborative networks, and an engaged consumer base. By providing a rich tapestry of evidence, models, and insights from across the globe, this Research Topic offers a valuable roadmap for researchers, policymakers, and practitioners dedicated to cultivating a more just and resilient future for food and agriculture.

Author contributions

AMGA: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. PM: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. PL: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. PKS: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing.

Conflict of interest

The author(s) declared that this work was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declared that generative AI was not used in the creation of this manuscript.

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