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Promoting Multifunctional Agriculture in India

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ABSTRACT

Concerns regarding productivity-driven agricultural policies since the 1970s have impacted on the quality of the environment and rural vitality. in the recent decades, researchers have attempted to restructure and enlarge the scope of agricultural policy by including aspects like multifunctionality that include valuable non-commodity outputs in addition to the commodities that generate most of its revenue. In addition, multifunctionality of agriculture may be ideally understood by placing it within the framework of sustainable development. It provides the underlying mechanisms and transition processes required for attaining the sustainability goals. As such, the focus is on gleaning strong elements from different approaches for an integrated perspective that focuses on transition processes towards sustainable agricultural and rural development. Towards this end, new institutional arrangements that go beyond the state-market divide (community supported agriculture, trusts, contracts between tourism sector, consumer and farmers), an optimal level of decentralisation for policy design and matching governance mechanisms is an important strand in policy research that can account for the complementarities and co-production of farming, ecological and socio-cultural systems. Therefore, an ideal policy format for doubling farmers' income, and a simultaneous endeavour to achieve sustainability in agriculture would be to advance our understanding of the multiple functions of agriculture by creating contextual prototypes of multifunctional farming systems.

Key words: *Multifunctionality of agriculture, Sustainability, Multifunctionality, Indian agriculture*

Introduction

Concerns regarding productivity-driven agricultural policies since the 1970s have impacted on the quality of the environment and rural vitality. Subsequently, the 1990s witnessed an open economic orientation that led to repercussions on agriculture policy-making and have faced severe sustainability concerns. As such, in the recent decades, researchers have attempted to restructure and enlarge the scope of agricultural policy by including aspects like multifunctionality that include valuable non-commodity outputs in addition to the commodities that generate most of its revenue. This is an endeavour that aims at operationalising a holistic perspective on agriculture. Towards this end, the Indian government's ambitious goal to double farmers' income by 2022 is also seen as a paradigm shift in the agricultural policy space highlighting society's growing sensitivity towards the role of farming ecosystems and the rural communities. Therefore, finding an efficient set of policies that integrate current goal of doubling farmers' income and multifunctionality is postulated as a promising

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framework to transform agriculture. Yet it remains a complex task due to the heterogeneous disciplinary approaches of multifunctionality in relation to different policy agendas.

The earliest use of the multifunctional agriculture (MFA) concept can be traced back to the Agenda 21 of UNCED in 1992. The fourteenth chapter in the Agenda highlighted the need to consider the multifunctional aspect of agriculture while reviewing the integration of sustainable development in the agriculture policy. Therefore, multifunctionality and sustainability have both been officially advocated as key concepts for agriculture and rural development across the world. The concept was promoted in the Common Agricultural Policy (CAP) by the European Union to justify agricultural support negotiations at the World Trade Organisation (WTO) based on a normative interpretation of the multiple roles assigned to agriculture. There was basic consensus on the environmental, social, economic and cultural benefits which were attributed to the multifunctional nature of agriculture.

While, the analytical framework based on a positive interpretation of MFA (Multi-Functional Agriculture) was developed by the OECD (Casini and Lombardi, 2009) and adopted as a policy principle related to the multiple and interconnected nature of outputs''*beyond its primary function of supplying food and fibre, agricultural activity can also shape the landscape, provide environmental benefits such as land conservation, the sustainable management of renewable natural resources and the preservation of biodiversity, and contribute to the viability of many rural areas*'' (OECD, 2001, 2003, 2005).

In the recent years,various approaches have reconceptualised the concept beyond trade-related issues highlighting the key role of agriculture in sustainable rural development. This has imposed implications on the analytical research tools and techniques used to assess all the economic, social and environmental aspects associated with MFA as illustrated in Figure 1.

Approaches to MFA

The concept of multifunctionality augmented agriculture functions to include environmental contributions including biodiversity and climate regulation, food security, preservation of rural landscapes and local cultural heritage, conservation of plant genetic resources, wildlife habitats and rural vitality that are jointly produced in an agro-ecosystem. The relationship between them is interactive and dynamic and changes with prevalent management practices and policies. However, markets for some of non-commodity outputs do not exist or function inadequately that result in failure to guarantee allocative efficiency in terms of social utility and costs. Conceptually, Van Hylenbroeck *et al.* (2007) described MFA as a locally embedded model of agriculture linking the positive rural supply side and the normative urban/consumer demand side. While, Wilson (2007) discussed the differences between economic or policy based interpretation and a holistic discourse of MFA. The former group related to agriculture as an economic activity producing commodity and non-commodity outputs and the regulatory framework, while the latter related to the interlinkages to social and cultural processes and rural development.

Fig. 1. Multifunctional Agriculture

Source: IAASTD (2009) Agriculture at a Crossroads: Global Report. Island Press, Washington DC, USA, 590p.

Wilson (2007) and Renting *et al*. (2009)proposed a broad perspective on multifunctionality based on a transition-oriented approach that is dynamic and entails three fundamental aspects that are important for conceptualizing multifunctionality (a) agriculture as co-production of social, cultural and natural capital, (ii) the existence of interactions at multiple spatial and temporal scales that incorporates various hierarchical levels (field – farm –landscape – region), and (iii) recognition of the heterogeneity and diversity of bio-physical and ecological as well as socio-institutional entities. These aspects are essential ele-

ments in the formulation of frameworks for the evaluation, modelling and exploration of multifunctionality.

As a result of a diverse and fuzzy conceptualisation of MFA, eight different Concept Oriented Research Clusters (CORC) were created by different epistemic communities across the world (Caron *et al.,* 2008). The analyses of these CORCs are disaggregated into market regulation approaches, land-use approaches, actor-oriented approaches and public regulation approaches (Caron *et al.,* 2008, Renting *et al.,* 2009). For instance, Sumelius and Backman (2008) using CORC 7 examined multifunctionality from the perspective of society's demands that ranged from traditional items of food and energy to other elements or social functions from agriculture and rural environments such as landscape, environmental quality, biodiversity, food security, animal welfare, cultural and historic heritage. The authors studied the establishment and management of policies and new markets in Finland, Germany, Ireland, Latvia, the UK and less developed countries and found that there were both similarities and differences in policies related to MFA. Except Latvia and LDCs where virtually no research employed the concept of MFA, there has been extensive research on agri-environmental schemes, pluriactivity and income generation and perceptions of MFA in these countries. Further, Germany and UK, were the only countries where studies were conducted on creation of new markets/services for multifunctionality such as compensatory purchases from a pool of biodiversity-enhancing farming measures, energy sources from agriculture, biodiversity and landscape.

In terms of evaluative approaches, the *Multiagri*[1] project also provided a comprehensive overview of research in Europe on the multifunctional character of agriculture that needs to be promoted to fulfil the potential of agriculture as a central pillar of sustainable development. It includes three dimensions in its approach to evaluate agricultural landscapes. Other approaches that quantify, value and map the multifunctionality can also be beneficial in subsequent management and policy making, such as an integrated framework for MFA and ecosystem services (Huang *et al.,* 2015), farm-level multifunction qualification using indicators (Anderson *et al.,* 2015), scenario analysis for integrated agricultural landscapes using a bio-economic model (Chopin *et al.,* 2016) and trade-off analysis (Zhen *et al.,* 2017) among others. Recently, Fagioli *et al.* (2017) used the multiple criteria framework to evaluate the multifunctional value across the agri-food value chain system.

It may be noted that no holistic unifying methodologies for empirical analysis of all MFAs elements and dimensions have been undertaken resulting in a gap between micro-level time bound studies on income and profitability and society-level studies on environment, food security, trade, social and cultural facets (Sumelius and Bäckman, 2008; Zander *et al.,* 2008) as different approaches have made progress in isolation and developed largely in parallel.

Potential for sustainable multifunctional agriculture in India

India, with 9.6 per cent of the global net crop[2] area has a great potential to make farming a sustainable and profitable activity taking into account all the facets of an agro-ecosystem. Indian agriculture accounts for 16 per cent of the share of the total Gross value added, 54.6 per cent of the total workforce[3] and close to 47.3 per cent of the cropland area owned by marginal and small farmers[4]. Despite a steady decline of its share in the GDP, it is still the largest economic sector and plays a significant role in the overall development of the country. However, externalities from agriculture such as amenity value of landscape, food security, preservation of rural communities that should have implications on the national agricultural policy have inadequately or notfully supported with efficient policy instruments rendering them unaccounted for in agriculture net value. This could be due to the fact that measures adopted in policies vary according to the priority governments attribute to the multifunctional nature of agriculture.

India is still grappling with severe social, political, institutional and budget constraints that have taken precedence in policies in addition to the prevailing liberalisation agenda. At present, Indian agriculture post the reform induced growth acceleration, is plagued with a number of problems that have declined the efficiency of agro-ecosystems. They range from non-viability due to structural weakness, indebtedness and suicide among marginal and small farmers, technological stagnation, ecological resource degradation, climate change, pest resistance, rising food prices to lack of public investment. These conditions, altogether necessitates

a search for an alternative agriculture perspective that is holistic and ecologically sound. In light of the current push to achieve the Sustainable Development Goals, multifunctionality of agriculture has the potential to transform rural development models and contribute to sustainable development that may improve the socioeconomic status of farmers.

The transitional and integrative approach for MFA discussed earlier has strong similarities with sustainability science research that is interdisciplinary, multi-scaled and synergistic in its approach. It challenges the ways in which agricultural activities are analysed, assessed and interactions between natural and social processes recognized. For example, it accounts for the evolved spatiotemporal interactions that blend modern agro-ecological scientific understanding with the traditional knowledge systems largely prevalent in India to enhance food security and efficient management of agro-ecosystems rather than narrowly adopt industrial technology favoured by agro-based industries.

As such, the concept of multifunctionality is novel and currently may not being fully considered in India's policy documents related to agriculture apart from commodity and subsistence production. Although, the government does not implement the concept of multifunctionality verbatim in national plans and policies for rural development, it is operationalised in relative concepts such as "economic diversification", "rural development" or "alternative activities", "secondary agriculture" and "sustainable agriculture". A few elements of the concept are also present in associated environmental policies, agroforestry and forest policies that have a close connection to multifunctionality. Therefore, it can be inferred that although there are no explicit policies concerning multifunctionality, there are some implicit references found in the scattered literature on different activities influenced by agriculture and rural development.

A few cases where multi-functionality of agriculture in India have been highlighted provide insight into the evident role it plays in contributing to food security, livelihood creation, natural resource conservation and preserving the aesthetic and recreational value of rural landscapes. Patil and Purushothaman (2018) taking into account the multi-functional character of agrarian landscapes used a plurality of approaches related to land-use functions, farming scenarios, simultaneous equations model and governance analysis to analyse sustainability of small farms in Karnataka State. The authors found that there was an improved sustainability performance of organic farming policies in small and rain-fed farms compared to large and irrigated farms. They concluded that there is a need for synchronisation of divergent policy directions, well-informed governance strategies and integrated localized visions for farming to recognize the multifunctionality of agrarian land use.

Another integrative perspective would be to combine MFA and ecosystem services that can facilitate the integration of ecosystem services for formulation of effective incentives for public non-traded outputs. The incentives may support agricultural production using production-linked payments that enhance the multifunctional attributes of agriculture.Taking it further, a portfolio approach that supports multiple functions includes payments for ecological services (PES) and innovative methods of agricultural management, including ecological agriculture, conservation agriculture and the management of biological diversity. Based on estimates drawn from van Ploeg and de Groot (2010) for values of services from cultivated land agro-ecosystems apart from food, water, raw materials, non-commodity outputs such as air quality, climate, waste sinks, soil fertility, pollination, genetic diversity and recreation, Indira Devi *et al* (2017) used the Gross Domestic product deflator to project the values for 2016 and roughly estimate that Rs.1.74 lakh per ha per year was the value excluding provisioning and recreational services that are marketed that could be equitably paid to farmers.

Therefore, an ideal policy format for doubling farmers' income, and a simultaneous endeavour to achieve sustainability in agriculture would be to advance our understanding of the multiple functions of agriculture by creating contextual prototypes of multifunctional farming systems. As projected by van der Ploeg and Roep (2003), conventional agriculture in India can also spread in three directions viz. rural context, agri-food networks and internal resource mobilisation (Figure 2). For example, a dairy farm with agro-tourism and nature conservation, agroforestry with combinations of *Acacia* and rice traditional agroforestry system in Assam, farming systems that combine domesticated fruit trees and forest trees in Meghalaya have shown to earn higher net returns (Pandey, 2007) and institutional arrangements like Participatory Guarantee System Organic Council, India. The challenge of in-

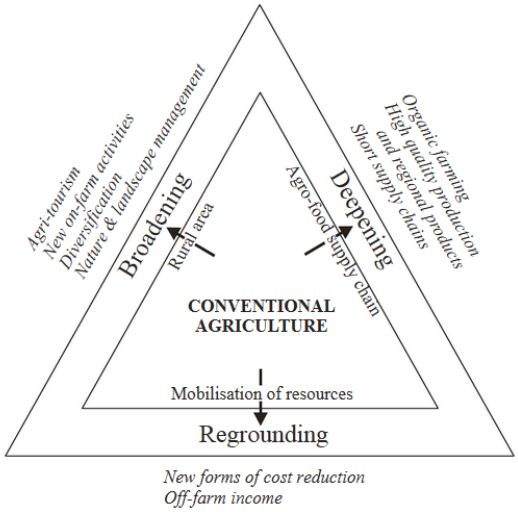

Fig. 2. Shift from Conventional to MFA
Source: van der Ploeg and Roep (2003)

corporating MFA therefore lies in capitalising on diversity and to match the function combinations with farmer, local and regional variations.

Conclusion

Multifunctional agriculture is becoming a global theme both in trade policy, rural development and academic interdisciplinary research. It highlights the fact that farmers should be sustained/incentivised by agricultural policy and contextual interventions for their role in the conservation of the environment and the socio-economic fabric prevalent in rural areas. Therefore, an innovative integrated policy may encourage farmers to move from conventional to multifunctional agriculture and may encourage consumers to increase their demand of food and non-food products and services.

In addition, multifunctionality of agriculture may be ideally understood by placing it within the framework of sustainable development. It provides the underlying mechanisms and transition processes required for attaining the sustainability goals. As such, the focus is on gleaning strong elements from different approaches for an integrated perspective that focuses on transition processes towards sustainable agricultural and rural development. Towards this end, new institutional arrangements that go beyond the state-market divide (community supported agriculture, trusts, contracts between tourism sector, consumer and farmers), an optimal level of decentralisation for policy design and matching governance mechanisms is an important strand in policy research that can account for the complementarities and co-production of farming, ecological and socio-cultural systems.

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