



Farm to Fork: A Sustainable and Green Agricultural Value Chain Approach

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Abstract

Examining and ensuring the food transition from production as raw produce to consumption as finished food is essential. This paper examines the Farm-to-Fork (F2F) strategy within the context of the sustainable agricultural value chain approach, which focuses on reducing environmental impact, maximizing economic returns and achieving food security. This study reveals disparities in farm produce prices between producers and consumers, highlighting the need for an ecologically and economically sound, sustainable agricultural value chain approach. Furthermore, this paper highlights the excellence of the F2F strategy in terms of a sustainable value chain over the conventional approach. It depicts the benefits of this strategy to all stakeholders. This paper concludes that it is high time to adopt an integral face-to-face (F2F) sustainable agricultural value chain approach to uphold sustainable agriculture, maintain the nutritional value of food, create employment opportunities and maximize the economic benefits for rural people and local farmers.

Keywords: Food security, Rural economy, Sustainable agriculture, Value chain

Introduction

Enjoying a tasty supper in a star hotel may seem unusual on a calm evening! However, when one sees the dishes on the dining table, they may wonder about the high prices, which involve the same vegetables that were initially available at the farmer's market and have less of the producer's share in the consumer's rupee. This is due to the value added at each stage and in the product's processing phase. Thus, interested in understanding the pathway from soil and farm to supper and fork, which unveils a complex understanding of the production-to-consumption web of agricultural products. The farm-to-fork approach focuses on the relevance of a sustainable future through in-depth analysis of the value chain, which ultimately leads to better environmental and economic welfare of the farming society.

Farm to Fork Strategy: An Overview

The term "farm" generally implies the origin of food and "fork" depicts the end of consumption. Cotta (2025) refers

to Farm to Fork (F2F) as an interconnection among health, ecosystems, the value chain, consumption patterns and planetary boundaries, which links together a sustainable environment, social aspects of food production and consumption and provides economic benefits to all stakeholders.

According to Apostolos and Alexandros (2024), the F2F strategy is to:

- i) Reduce the use of synthetic pesticides by 50% by 2030.
- ii) Loss of nutrients is halved without affecting soil fertility.
- iii) By 2030, approximately 25% of agricultural land in the EU is expected to be under organic farming.
- iv) Boost sustainable and healthier diets.
- v) Assure fair economic returns for all stakeholders in the food supply chain.
- vi) Improving the circular economy, which encourages sustainable systems, the reduction of waste and the effective use of natural resources.

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Stages of the Value Chain Approach in Agriculture

The value chain in agriculture goes beyond the supply chain by focusing on adding value at each stage of the process. According to Thakur *et al.* (2024), the stages of the value chain approach in agriculture include:

1. **Input Supply:** Refers to the provision of quality inputs that play a central role in enhancing both productivity and the quality of output.
2. **Production:** This stage is concerned with Good Agricultural Practices (GAP) by adopting climate-smart farming activities and precision farming, which is more productive and sustainable.
3. **Processing:** Creating value for products by cleaning, packaging, branding and quality specifications.
4. **Marketing:** The capability to reach consumers efficiently through digital channels, which enhances the availability and visibility of the markets and branding to establish consumer loyalty.
5. **Distribution:** Ensuring efficient logistics, including cold chain systems and decentralized warehouses, while reducing costs through improved supply chain management.
6. **Retail:** Customer relationships are enhanced by offering value-added services such as convenience packaging, Eco-labelling and traceability.

Supremacy of F2F Value Chain

Health Conscious

The focus on the sustainable value chain of farm products offers optimum quality and food security to the consumers. Farm-to-fork system allows food to be produced locally, thereby shortening the distance that food must travel between the farm and the consumer and therefore allowing people to consume fresher and healthier food. This leads to reduced intake of processed food and substitution of processed foods with healthier and plant-based foods as suggested in the global population health guidelines to fight diet-related diseases such as obesity, diabetes and cardiovascular diseases (Matías *et al.*, 2024).

Ecological Advances

Farm-to-fork ensures sustainability through optimization of fertilizer use, minimization of pesticide use and reduction of GHG emissions as a result of agriculture due to soil carbon sequestration, agroecological practices and enhancement of biodiversity through crop diversification and organic farming.

Upholding Local Farmers and the Rural Economy

The F2F strategy strengthens local farmers and the rural economy by opening new ways to reach local and regional markets, enabling them to receive a fair and stable price, thereby facilitating economic stability. Thus, the Farm to Fork (F2F) strategy increases revenue and decent working conditions throughout the supply chain, which in turn contributes to alleviating poverty and eliminating social inequality in rural areas (Wesseler, 2022).

The benefits of F2F strategy, as observed in the figure 1, include sustainable production, which preserves soil health, healthy and safe food, increased profitability of farmers, rural

development, improved traceability and transparency and increased consumer trust. It focuses fundamentally on the interdependence of agroecosystems and human health with a nexus of healthy soils, healthy crops and healthy humans. This is a more efficient method to reduce externalities and create resilient agri-food systems, which are essential to sustainable development and inclusive growth.



Figure 1: Benefits of the F2F strategy

Conclusion

Streamlining farm-to-fork operations alongside a sustainable agricultural value chain approach involves using technology and practices to ensure better revenue, standard food products, efficient linkage and employment opportunities to local communities, thereby improving the rural economy and traceability, transparent movement and value added to food from the farm to the consumer, from production to consumption. Yet, unique challenges prevail, such as a lack of awareness among farmers, difficulty in changing the customs and beliefs of farmers from their traditional farming practices and limited knowledge of technology. Regardless of these obstacles, the F2F approach in the sustainable agricultural value chain opens up an optimistic channel to attaining higher economic equity, environmental sustainability, food stability and a larger proportion of consumer rupee in the hands of the producer by meeting the needs of consumers and addressing nutritional concerns.

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