

# Agri-Food Policy Transition and Expectations for Emerging Technologies: Implications from Socio-Technical Regimes

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## 1. Introduction

As the world is undergoing a major shift in its current situation, including climate change, food security concerns, and technological change, agricultural policies are seeking ways to respond to these trends. The "Green Food System Strategy" (MeaDRI strategy) was proposed by the Japanese Ministry of Agriculture, Forestry and Fisheries (MAFF) in 2021 within this kind of policy context, and tries to incorporate various technological elements, including smart agriculture.

In this paper, I review the trends of technological development in the food and agriculture sector, including the MeaDRI Strategy and other countries' strategies, and discuss what kind of innovation is needed to promote transitions toward a decarbonized society. In the course of this discussion, I will try to uncover implications of various approaches such as sociology of expectations and socio-technical regime theory. In doing so, I will pay particular attention to the multifaceted development of innovations, and clarify the issues that need to be considered in policy responses to solve problems arising from future challenges.

## 2. Innovation Strategies Compared:

### Japan, the EU, and the US

#### 1) MeaDRI Strategy (Japan)

In May 2021, the Japanese MAFF released the "Green Food System Strategy: Achieving both productivity improvement and sustainability of food, agriculture, forestry, and fisheries through innovation" (MeaDRI Strategy). As the subtitle of the strategy clearly indicates, it is intended to solve the somehow conflicting goals of improving productivity and sustainability through innovation. Among the specific initiatives listed in the strategy are a number of new technologies (e.g., drones, AI, super varieties, food tech) that have been attracting attention in recent years.

#### 2) Farm to Fork Strategy (EU)

In May 2020, the European Commission published "A Farm to Fork Strategy: for a fair, healthy and environmentally-friendly food system". It was developed by the European Commission for a sustainable food system under the European Green Deal (EGD), which was proposed as a new growth strategy in the face of climate change. It describes a just transition to a food system that is desirable for consumers, producers, the climate and the environment. Although innovation is also emphasized, the emphasis is on discussing the key frameworks that will drive research and development rather than specifically discussing individual technologies.

#### 3) Agricultural Innovation Strategy (US)

In the United States, the USDA released its "Agricultural Innovation Strategy" in January 2021, with the goals of increasing agricultural productivity by 40% and halving the environmental footprint by 2050. The strategy is unique in that it identifies four key innovation clusters ((a) genome design, (b) digital and automation, (c) prescriptive intervention, and (d) system-based farm management) and focuses on how to utilize these technologies.

#### 4) Comparison Among Strategies

Japan's strategy sets a somewhat limited policy goal (compared to the EU) of addressing climate change, such as increasing productivity and greening policies. It is then characterized by a commitment to deploy the widest possible range of technological solutions, while taking into account the current state of domestic agriculture and public understanding of the issue. In contrast, references to specific technologies are limited in the EU. Both Japan and the US share a strong orientation toward the adoption of new technologies, as both are formulated by the administrative offices related to agriculture.

It might be useful to visually contrast the main keywords

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