

# The Evolution of International Grain Loss Reduction Policies and China's Reference

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## Abstract

This article explores the evolution of international food loss reduction policies and analyzes their referenceable significance for China. Through a retrospective analysis of the historical development of global food loss reduction policies, this paper examines the experiences and strategies of major countries in controlling food losses, revealing a shift from simple production efficiency to multi-link management. Although China has achieved certain results in the policy of reducing grain losses, it still faces various problems such as inconsistent policy implementation and significant losses in circulation links. The article points out that drawing on international experience, especially the successful measures of the European Union and the United States in circulation management and consumption, can effectively promote the improvement of China's grain reduction policies. Ultimately, it will promote more efficient management of food resources in China to ensure food security and sustainable development.

## Keywords

International food; Loss reduction policy; Policy evolution

## Introduction

The issue of food loss reduction is one of the important challenges facing global food security. According to relevant data from the Food and Agriculture Organization of the United Nations (FAO), about one-third of the world's food is wasted or lost every year, which puts enormous pressure on the economy, environment, and society. Against the backdrop of increasing international attention to food security and sustainable development, food loss reduction policies have gradually become an important means for countries around the world to address food crises. Since the early 20th century, food loss reduction policies have gone through different stages of development globally, and countries have adopted various strategies to address this issue. As the world's largest producer and consumer of food, China's issue of food loss reduction is particularly prominent. In recent years, the Chinese government has continuously strengthened its attention to food loss reduction and implemented a series of policy measures to promote food security and sustainable development. However, there are still many challenges to be faced. This article aims to analyze the evolution of international food loss reduction policies and explore how to draw on international experience to further promote the optimization and implementation of China's food loss reduction policies, in light of the actual situation in China.

## 1. The Evolution of International Food Loss Reduction Policies

### 1.1 Market Orientation of US Grain Reduction Policies

The US food loss reduction policy has been closely integrated with the principles of market economy since the mid-20th century, with incentive mechanisms as the core, and reducing food waste through market-oriented means. The implementation of this policy is reflected in various aspects, including adjustments to agricultural subsidies, optimization of market pricing mechanisms, and promotion of consumer education. Specifically, the United States has shifted its focus from

supporting production quantity to incentivizing quality and circulation processes by adjusting its agricultural subsidy methods. For example, the early large-scale grain reserve policy was gradually replaced by more flexible market circulation mechanisms to reduce grain backlog and waste caused by overproduction [1]. At the same time, the government's implementation of the "Food Recycling Network" is an important manifestation of market-oriented policies, aimed at encouraging businesses to donate surplus food to food banks or other public welfare organizations, and turning potential waste into resources. Consumer education is another key link, as the United States uses multi-level promotional activities to raise public awareness of the economic and environmental costs of food waste, thereby changing consumption habits. This market-oriented grain reduction policy not only demonstrates its flexibility and adaptability but also demonstrates how the government balances economic interests and social responsibility in policy design.

## **1.2 Legal Constraints on Japan's Grain Loss Reduction Policy**

Japan's grain reduction policy is known for the completeness of its legal system, with its core feature being the mandatory regulation of corporate and individual behavior through legislation to control grain waste from the source. For example, the "Food Circular Resources Law" implemented in 2001 clearly stipulates that food production and distribution enterprises must classify and dispose of waste food while encouraging resource utilization. This law also sets reduction targets for food companies and requires regular submission of relevant reports to accept government supervision. In addition, the Food Waste Reduction Promotion Law passed in 2019 further strengthened public participation, stipulating that local governments have an obligation to carry out educational activities and popularize specific measures to reduce food waste to residents. The mandatory nature of the law makes Japan's policy implementation significantly better than other countries, especially in the management of the food supply chain. Through detailed legal provisions, the responsible parties in production, distribution, consumption, and other links are clearly divided, avoiding the phenomenon of shirking responsibility in policy implementation [2]. At the same time, Japan's legal policies also emphasize the integration with cultural traditions, such as advocating for frugal consumption and echoing its "do not be physically inactive" culture, further enhancing the social identity of policies.

## **1.3 Technological Empowerment of European Grain Loss Reduction Policies**

The food loss reduction policy in Europe is driven by technological innovation as the core, improving agricultural production efficiency through technological means, optimizing the food supply chain, and reducing food waste. For example, the EU explicitly supports the application of smart agriculture technology in multiple policies, reducing overproduction through precision planting and agricultural big data analysis [3]. Meanwhile, in food supply chain management, Europe widely adopts cold chain logistics technology to ensure the freshness of food during transportation and storage and reduce waste caused by spoilage. The European Commission has also established several special research funds to support technological research and development projects aimed at reducing food loss and waste. A typical case of these technological policies is the "Food Value Chain Optimization Plan", which uses IoT devices to monitor the real-time flow of food from the field to the dining table, accurately tracking the flow of food at every link and reducing waste caused by information asymmetry. In addition, Europe is also promoting food reuse through technological means, such as using advanced processing technologies to convert food processing by-products into animal feed or bioenergy. This policy path empowered by technology not only reflects the forward-looking nature of Europe's food reduction policy but also highlights the potential of technological innovation in addressing global food issues.

## **1.4 Cultural Differences in Policy Concepts Among the United States, Japan, and Europe**

Behind the food loss reduction policies in the United States, Japan, and Europe, there are unique cultural beliefs that support them, and these cultural differences directly affect the design and implementation path of the policies. In the United States, the cultural traits of individual freedom and market competition make policies more reliant on market tools, guiding businesses and consumers to voluntarily reduce waste through incentive mechanisms. In Japan, policy designs deeply influenced by the concept of "no body, no body" tend to strengthen constraints and supervision through legal and moral norms, and this cultural foundation also makes it easier for the public to accept the government's mandatory policies. In contrast, Europe's policy philosophy is more reflected in its long-term focus on sustainable development, which is closely related to its cultural emphasis on environmental protection and technological innovation. The EU policy often emphasizes the principle of "shared responsibility", requiring member states to jointly share obligations in the implementation process and emphasizing the role of technological means in promoting social change. These cultural differences not only determine the implementation strategies of food loss reduction policies in different regions but also reflect the value orientations of different societies when facing global food issues.

## 2. Analysis of China's Reference to International Grain Loss Reduction Policies

### 2.1 Integration and Improvement of Policy Framework

Although China's policy framework for reducing grain losses started relatively late, with the increasingly severe issue of food security, the government has gradually attached importance to the formulation of policies for reducing grain losses. Drawing on the experience of international food loss reduction, especially the practices of the European Union and the United States, is of great significance for the improvement of China's policies. Internationally speaking, food loss reduction policies usually cover three levels, namely efficient management of the production process, reduction of losses in the circulation process, and control of waste in the consumption process. In China, there is still significant room for improvement in the overall planning and integration of grain reduction policies in these three aspects. China's grain policy has always focused on optimizing the production side, covering improvements in farming techniques, grain storage, transportation, and other aspects. Especially in recent years, with the implementation of the "14th Five Year Plan" for national grain circulation, the management of grain circulation has gradually become standardized. However, there are still many aspects that have not been able to achieve the maximization of grain reduction, which can be inspired by the comparison of grain circulation policies between China and the European Union. The EU has established a diverse food loss reduction strategy through a series of institutional designs, such as strengthening innovation in storage technology, improving agricultural subsidy policies, and implementing strict food loss monitoring mechanisms. Compared to other countries, China lags behind slightly in this regard, especially in terms of the implementation and operability of policies at the local level, lacking a unified regulatory framework, resulting in significant losses in the grain circulation process. When drawing on international experience, China can refine the legal framework for grain reduction, increase supervision over various links such as grain production, storage, and transportation, and gradually promote the implementation of grain reduction policies at the local level by building a system similar to the EU's "Food Reduction Plan", in order to clarify the responsibilities of local governments. In addition, the government needs to actively promote cooperation between research institutions and enterprises, committed to developing grain storage technologies and logistics management tools that are suitable for China's national conditions. Only through the dual promotion of policies and technology can we effectively reduce the losses in the grain circulation process.

### 2.2 Guidance on Consumer Behavior

Beyond the production and distribution links, food waste on the consumer side is also a serious problem facing China. Internationally, many countries rely on public education, policy incentives, and advocacy of social responsibility to reduce food waste [4]. The experience of the United States and Japan in this regard can be used as a reference for China. The United States implements the "Food Waste Action Plan" to incentivize the food industry to reduce waste, and through multiple regulations, requires supermarkets and restaurants to dispose of or donate surplus food reasonably. Moreover, the culture of food waste in the United States has been deeply ingrained in people's hearts through the education system, and the awareness of food conservation has gradually taken root in society from elementary school to adulthood. In China, despite the continuous promotion of food conservation by the government and media in recent years, public wasteful behavior is still quite common. This is particularly prominent in the catering industry, where many restaurants vigorously promote the "oversupply" and "free gift" models, resulting in a large amount of food being discarded without being fully consumed by consumers. Drawing on the experience of the United States, China can strengthen policy guidance to establish limits on food waste in the catering industry, regulate corporate waste practices, and implement policies such as the "Food Donation and Reuse" policy in the United States to incentivize businesses and consumers to donate or reuse surplus food. At the same time, the government should also strengthen guidance on consumer behavior, especially by promoting food conservation in public media and education systems. Through multi-channel promotion and case education, consumers are made aware of the environmental and economic costs caused by food waste, gradually changing the public's consumption habits. In addition, by establishing a reward and punishment mechanism, the government can provide policy support or rewards to catering enterprises that comply with grain conservation regulations, thereby further mobilizing the participation and enthusiasm of all sectors of society.

### 2.3 Policy Implementation and Local Differentiation

In China, the implementation of policies related to grain reduction is often affected by the varying execution capabilities of local governments. Despite the continuous issuance of relevant policy documents by the central government, the implementation results at the local level have shown a mixed pattern of good and bad. International experience shows that the success of food loss reduction policies largely depends on the strong implementation of local governments. For example, in EU countries, the implementation of many food reduction policies is the responsibility of local governments. Local governments formulate specific implementation rules based on their own characteristics and regularly conduct

evaluations and feedback. This differentiated policy implementation mechanism ensures that policies can accurately meet local needs and enhance the effectiveness of policy implementation [5]. For China, its vast territory and uneven economic development, coupled with deviations in policy implementation by local governments, pose challenges to the comprehensive implementation of grain reduction policies. In some economically underdeveloped areas, the awareness of grain reduction is quite weak, and there is a lack of sufficient funding and technical support to implement relevant policies. In economically developed regions, although policy implementation is relatively effective, due to changes in market demand and differences in agricultural product structure, strategies and measures for reducing grain losses may deviate from those in other regions, resulting in differences in policy effectiveness. To reduce such differences, China can draw on international experience, especially the measures of the European Union, to encourage local governments to formulate differentiated food reduction policies based on local conditions and strengthen cooperation and experience exchange among local governments. The central government needs to formulate a unified framework policy, provide technical support and financial support, and allow local governments to flexibly adjust the implementation process based on local characteristics. Under this premise, enhance the regulatory functions of local governments, and use regular evaluation and incentive mechanisms to ensure the implementation of policies and timely correction of deviations in execution. This top-down linkage model from the central to the local level will be beneficial for the efficient implementation of China's grain reduction policy.

### 3. Conclusion

The issue of food loss reduction is related to global food security and sustainable development. The evolution of international food loss reduction policies indicates that they have shifted from simply focusing on increasing production to comprehensive management of circulation and consumption, demonstrating that the world is gradually maturing in addressing food loss issues. Although China's policies in this field have achieved certain results, it still faces many challenges, especially in terms of the completeness of the policy framework and the gap in local implementation. Referring to international experience, especially the successful measures of the European Union and the United States in circulation management and consumer control, can help China improve its efficiency in reducing grain losses and take more solid steps forward. In the future, China needs to strengthen regulatory construction, promote technological innovation optimization, and use diversified policy measures to advance the full chain management of grain loss reduction, in order to achieve the dual goals of food security and sustainable resource utilization.

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