

## ISSUE BRIEF

# **PROMOTING FOOD DONATION: ON-FARM FOOD LOSS & AGRICULTURAL RECOVERY**

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## About The Global Food Donation Policy Atlas

The Global Food Donation Policy Atlas is a first-of-its-kind initiative to promote better laws on food donation to help address food loss and food insecurity. This project maps the laws affecting food donation in countries across the globe to help practitioners understand national laws, compare laws across countries and regions, analyze legal questions and barriers to donation, and share best practices and recommendations for overcoming these barriers. The project is a collaboration between the Harvard Law School Food Law and Policy Clinic (FLPC) and The Global FoodBanking Network (GFN). To learn more and compare the food donation laws and policies for the countries FLPC has researched to date, visit [atlas.foodbanking.org](https://atlas.foodbanking.org).

## About the Harvard Law School Food Law and Policy Clinic

The Harvard Law School Food Law and Policy Clinic (FLPC) serves partner organizations and communities by providing guidance on cutting-edge food system legal and policy issues, while engaging law students in the practice of food law and policy. FLPC focuses on increasing access to healthy foods; supporting sustainable food production and food systems; and reducing waste of healthy, wholesome food. For more information, visit <https://chlpi.org/food-law-and-policy>.



## About The Global FoodBanking Network

The Global FoodBanking Network (GFN) supports community-driven solutions to alleviate hunger in more than 40 countries. While millions struggle to access enough safe and nutritious food, nearly a third of all food produced is lost or wasted. GFN is changing that. It believes food banks directed by local leaders are key to achieving Zero Hunger and building resilient food systems. For more information, visit [www.foodbanking.org](https://www.foodbanking.org).



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# ABOUT THIS ISSUE BRIEF

Food loss and waste (FLW) is a significant and complex food system challenge. It occurs at every stage of the supply chain and generates significant social, environmental, and economic costs. An estimated one-third of food produced globally is ultimately lost or wasted along the supply chain.<sup>1</sup> This amounts to approximately 2.5 billion tons of food each year that ends up in landfills, where it emits methane, a potent greenhouse gas, as it anaerobically digests.<sup>2</sup> Meanwhile, in 2024 almost 30% of the global population was moderately or severely food insecure,<sup>3</sup> and up to 720 million people suffered from hunger.<sup>4</sup> Thoughtful public policies can help address these troubling trends and augment food system resilience, aiding in food recovery for social benefit and mitigating the environmental cost of food loss and subsequent excess production.

The Food and Agriculture Organization of the United Nations (FAO) defines “food loss” as the decrease in the quantity or quality of food resulting from decisions and actions by food suppliers in the chain, excluding retailers, food service providers, and consumers. It defines “food waste” as the decrease resulting from decisions and actions by retailers, food service providers, and consumers.<sup>5</sup> Globally, nearly 1.2 billion tonnes of food is lost at the farm stage each year, accounting for approximately 14% of food produced—more than is lost at the retail and consumer levels combined.<sup>6</sup> This waste occurs both during harvest and postharvest handling, driven by a complex interplay of climate events, infrastructure gaps, market access issues, and economic pressure. Despite its scale and significance, on-farm food loss remains underaddressed in national food waste strategies and policies.

Reducing this loss is essential for addressing food insecurity, enhancing farmer livelihoods, and mitigating climate change. Farm-stage food loss accounts for 2.2 gigatonnes of CO<sub>2</sub>e annually—nearly 4% of all global greenhouse gas emissions—and squanders valuable land, water, and labor. Unlike food sent to landfills—where anaerobic decomposition generates methane—food that is unharvested or plowed under contributes to greenhouse gas emissions primarily through the carbon footprint of wasted inputs: the energy, water, land, and labor invested in production. This distinction matters for policy. On-farm loss reduction and agricultural recovery are resource-efficiency strategies with environmental and economic benefits that extend beyond direct emissions reduction.<sup>7</sup> In addition to directly reducing food loss, investing in the recovery of agricultural products that remain safe and edible not only conserves resources, but also aids hunger relief efforts, advancing both sustainability and social equity goals. This aligns directly with international commitments: under the United Nations’ Sustainable Development Goals, target 12.3 calls on countries to halve per capita global food waste at the retail and consumer levels and to reduce food losses along production and supply chains, including postharvest losses, by 2030.<sup>8</sup>





## **RECOMMENDATIONS IN BRIEF**

The recommendations presented in this Issue Brief provide a starting point for stakeholders across the globe to strengthen their agricultural policy related to food waste and food donation. Food banks and other organizations with the mission to reduce food waste and increase food donation (collectively referred to as “food recovery organizations”), donors, and policymakers should consider additional opportunities to advance food donation and reduce FLW. The recommendations are as follows:

To help more produce get to market and reduce on-farm, postharvest food loss, national governments and their relevant departments and agencies should:

- 1. Include on-farm and postharvest loss in national FLW strategies.**
- 2. Incentivize on-farm donation with tax policy.**
- 3. Liaise between farms and food recovery organizations.**
- 4. Fund grants for recovery infrastructure.**
- 5. Prioritize and implement farmer education.**
- 6. Support third-party gleaning by nonprofit organizations.**
- 7. Support market development for upcycled foods.**
- 8. Allow food scraps for animal feed and other circular uses.**
- 9. Create surplus exchange and alternative market access programs.**

# BACKGROUND

The past decade saw an exponential increase in attention toward FLW, with the international community committing to halve FLW in the 2030 Agenda for Sustainable Development, reflected in the UN's Sustainable Development Goal 12.3.<sup>9</sup> FLW occurs at every stage of the food system: during the initial harvest due to fluctuating market prices, high labor costs, inadequate infrastructure, and demand for flawless produce;<sup>10</sup> during the retail phase by grocery stores and restaurants that overestimate customer demands and misunderstand shelf life and product date labels;<sup>11</sup> and during the consumption phase by consumers that engage in inefficient shopping and cooking practices.<sup>12</sup> These behaviors have significant environmental, economic, and social consequences. Food that is lost or wasted has a massive carbon footprint of 4.4 gigatons,<sup>13</sup> using roughly 30% of agricultural land<sup>14</sup> and accounting for 8% to 10% of total global greenhouse gas emissions.<sup>15,16</sup> The market value of food products lost or wasted is approximately \$1 trillion per year.<sup>17</sup>

Food banks and other food recovery organizations can help mitigate unnecessary FLW by recovering and redistributing safe, surplus food when policies enable and amplify such activities. In 2024 food banks kept 512 million kilograms of nutritious food out of landfills, eliminating 1.9 million metric tons of CO<sub>2</sub>e, roughly equal to the emissions of 443,000 passenger vehicles in a year.<sup>18</sup>

While FLW results in economic loss, food donation can generate sizeable economic gains. First, donation reduces the economic and environmental costs of producing food that otherwise goes uneaten<sup>19</sup> and curbs methane emissions caused by food decomposing in landfills.<sup>20</sup> Second, donation alleviates hunger, reducing healthcare expenses associated with malnutrition<sup>21</sup> and increasing productivity, educational fulfillment, and economic potential.<sup>22</sup> Third, food recovery operations create job opportunities at food banks and intermediaries and stimulate the economy by increasing the spending power of donation recipients.<sup>23</sup> Indirect gains, such as reduced hunger costs and more resilient supply chains, flow to society and ultimately help build stronger communities. Unlocking this spectrum of benefits requires clarity and sufficient incentives for farmers and donors to redistribute rather than discard surplus food.

Postharvest losses account for a substantial share of total food loss globally, particularly among highly perishable crops such as fruits and vegetables. These losses often result from a combination of cosmetic standards, price volatility, labor shortages, and limited infrastructure for storage or cold chain management.<sup>24</sup> According to FAO, an estimated 14%<sup>25</sup> of losses occur in regions with less-developed infrastructure and market access systems.<sup>26</sup> Reducing these losses presents a critical opportunity to improve food security, lower greenhouse gas emissions, and increase the efficiency of food systems while meeting SDG 12.3.

Agricultural recovery—or diverting surplus crops for human consumption rather than discarding them—is an important tool for sustainability and resilience. When food is recovered, it reduces the pressure on finite natural resources such as land and water while also helping to meet nutritional needs in food-insecure populations. Tools such as the World Wildlife Fund's (WWF) Global Farm Loss Tool help quantify the scale and causes of on-farm loss by collecting standardized data directly from producers.<sup>27</sup> Pilots conducted with growers in Colombia, Costa Rica, and the United States revealed consistent patterns of high loss, particularly of produce such as broccoli and cauliflower.<sup>28</sup> In California, the tool found that up to 56% of some brassica crops were left unharvested due to labor constraints and market rejection, even when still safe for consumption.<sup>29</sup> Complementary studies in the United States reinforce these findings. A landmark analysis in California across 123 farms found that, on average, 33% of edible crops remained unharvested, with some fields seeing losses of more than 50%, depending on the crop type and marketability.<sup>30</sup> Given the key problem of many crops not making it to market at all, prevention and investment in infrastructure are the first line of defense against high rates of on-farm food loss. Because some crops will still generate a surplus no matter the upstream efficiency, policies must support agricultural recovery in addition to reductions in food loss.

There are critical policy gaps in supporting recovery. While farmers may have the desire to recover or donate

excess produce, they often lack the economic incentives, legal clarity, or logistical support to do so. This Issue Brief takes a policy-oriented approach to addressing the problem of on-farm food loss and identifies key barriers and opportunities within the current system. It also highlights global best practices, drawing on case studies from diverse countries to showcase how well-designed interventions can reduce loss and strengthen food recovery infrastructure. Importantly, it acknowledges that not every solution will apply universally. Factors such as a country's development level, market integration (i.e., how well farmers are connected to formal supply chains, buyers, and processing networks), and infrastructure capacity will shape the appropriateness and effectiveness of each policy recommendation.

## KEY ISSUES

Reducing FLW on farms is essential to meeting global food security, environmental, and economic goals. Although global attention has increased around food waste at the retail and consumer levels, losses at the production stage remain despite their scale and significance. This section outlines the critical challenges contributing to farm-stage FLW, including infrastructure and logistics, market dynamics, economic barriers, and education and awareness.

### LACK OF INFRASTRUCTURE AND LOGISTICAL CHALLENGES

Many regions face significant infrastructural limitations that inhibit the ability to harvest, store, and transport surplus food safely and efficiently.

**Cold chain limitations.** Temperature-sensitive food is frequently lost due to insufficient refrigeration infrastructure. In low-income and rural regions, cold storage is limited or entirely absent. The inability to maintain food quality between harvest and market, especially for fruits, vegetables, and dairy products, leads to high spoilage rates.

**Road inaccessibility and poor transport infrastructure.** Food often cannot reach markets in time due to poorly maintained or inaccessible roads. This is particularly true in remote areas where road quality and connectivity are low. Perishable food may be abandoned on farms or spoil en route to distribution centers.

**Environmental factors.** Climate change exacerbates existing logistical barriers. Flooded roads, drought, or storms damage crops and delay transport. Changing weather patterns affect the timing and predictability of harvests, making it harder for farmers to align production with market demand.

### MARKET DYNAMICS

Market structure and buyer expectations can actively drive on-farm waste, particularly in middle- and high-income countries.

**Oversaturation and cosmetic standards.** Overproduction, driven by volatile or uncertain demand forecasts, often leads to gluts in supply. Simultaneously, strict buyer specifications regarding size, shape, or appearance of produce result in the rejection of edible but cosmetically imperfect crops. These crops are frequently left unharvested or abandoned from the supply chain immediately after harvest.

**Export-driven production.** In many export-oriented agricultural economies, farmers prioritize crops suited for foreign markets. If demand shifts or export logistics break down, these products may have no viable domestic market, leading to large-scale waste.

**Disconnect between producers and consumers.** A long, opaque supply chain separates farmers from end users, limiting their ability to adjust production in response to demand signals. This leads to mismatches in crop type, timing, and volume, increasing the risk of loss.

## **ECONOMIC BARRIERS**

Financial constraints significantly shape the ability of farmers to harvest, store, and redirect surplus food.

**Harvesting costs.** Even when food is marketable or edible, it may be left in the field if the cost of labor or machinery to harvest it exceeds the expected return. In many instances, labor shortages and high wage rates are key barriers.

**Farmer debt and thin margins.** Farmers globally operate on narrow profit margins and often face high debt burdens. This limits their ability to invest in waste-reduction measures such as storage, transport, or processing facilities. For example, cooling is recommended immediately to avoid spoilage, but it can require costly equipment.

**Lack of compensation for donation or diversion.** Most food systems do not offer meaningful incentives for farmers to donate or sell surplus food at lower margins. Without tax breaks, cost-sharing programs, or streamlined logistics, the most economically rational option may be to leave food in the field.

## **EDUCATION AND AWARENESS**

A lack of knowledge about food recovery opportunities and consumer behavior contributes to the perpetuation of farm-stage losses.

**Limited knowledge of food rescue programs.** Many farmers are unaware of local food banks, gleaning organizations, or redistribution programs that could utilize surplus harvests. In the absence of trusted partnerships or streamlined logistics, the cost of coordination remains high.

**Consumer familiarity and demand.** Downstream consumer preferences shape what is harvested. When consumers undervalue or reject imperfect produce, retailers pass those standards upstream, discouraging farmers from harvesting or planting nonconforming crops.

**Measurement and data gaps.** Few farmers track on-farm loss, and many national FLW monitoring systems exclude unharvested crops or animal feed diversion. This lack of visibility into on-farm FLW data hinders progress tracking, goal setting, and efficient policy design.

As these key issues illustrate, food loss on farms is a systems-level problem requiring a cross-sectoral response. Addressing food loss at the source will require investments in infrastructure—both for getting food to market and for recovering food that cannot make it to market—smarter market incentives, support for farmer livelihoods, and broad cultural shifts toward valuing all edible food. The following section outlines concrete policy recommendations to support this goal and showcases global examples.

# RECOMMENDATIONS

## 1.

### INCLUDE ON-FARM AND POSTHARVEST LOSS IN NATIONAL FLW STRATEGIES

National FLW strategies are foundational tools for aligning policy priorities, coordinating stakeholder action, avoiding redundancies, and directing funding toward shared goals.<sup>31</sup> They establish national commitment to FLW reduction and catalyze cross-sectoral engagement, regulatory coherence, and programmatic investment. Yet too often these strategies overlook the agricultural production stage, where loss volumes can be greatest and opportunities for recovery remain untapped.

National FLW strategies must explicitly include on-farm loss reduction and agricultural recovery to ensure an accurate assessment of the national environmental footprint, resource use, and emissions from the food system; to address key barriers faced by producers; and to unlock the economic, environmental, and social benefits of food rescue. Failure to do so risks perpetuating fragmented policies, underinvesting in rural and agricultural infrastructure, and missing scalable opportunities for food loss prevention and food access.

Some countries are beginning to model more holistic approaches. **Australia's** National Food Waste Strategy (2017) explicitly includes agricultural production as a target area for action.<sup>32</sup> The strategy sets sector-specific reduction targets and promotes collaborative innovation pilots across the supply chain, including a dedicated Horticulture Sector Action Plan that identifies food recovery opportunities and links producers to food recovery partners.<sup>33</sup> To support recovery of unavoidable organic food loss, the Australian government also administers the Food Waste for Healthy Soils Fund, which provides grants to build organic waste processing infrastructure, such as composting and anaerobic digestion facilities, that diverts nutrient-rich waste from landfills and returns it to productive agricultural use.<sup>34</sup>

In **Brazil**, agricultural recovery is integrated into the country's food security framework through the Interministerial Chamber on Food and Nutrition Security (CAISAN).<sup>35</sup> The *National Policy on Food and Nutritional Security* promotes food recovery directly from farms, particularly to supply public feeding programs like the national school meals program (*Programa Nacional de Alimentação Escolar*).<sup>36</sup> These initiatives are backed by funding streams from the federal budget and international institutions, and executed in partnership with farmer cooperatives and local municipalities.<sup>37</sup> More recently, Brazil launched its *II Intersectoral Strategy for Reduction of Food Loss and Waste (2022–2030)*, which is coordinated across three federal ministries. It contains specific targets for reducing loss in the family farming sector, including 83 actions directed at agricultural producers. The strategy provides a model for multi-ministerial coordination on farm-stage loss reduction.<sup>38</sup> In the **United States**, the *National Strategy for Reducing Food Loss and Waste and Recycling Organics (2023)* names agriculture as a cross-cutting priority.<sup>39</sup> The U.S. Department of Agriculture (USDA) is charged with supporting farm-level interventions through infrastructure investments, producer education, and tools such as the WWF's Global Farm Loss Tool.<sup>40</sup>

To address persistent data gaps at the production stage, the WWF developed the Global Farm Loss Tool, a standardized methodology that enables growers to quantify on-farm food loss directly in the field. The tool combines farmer surveys, field measurements, and crop sampling to identify where and why edible food is left unharvested or discarded. Pilots conducted across Colombia, Costa Rica, and the United States revealed consistently high levels of loss, often exceeding 30%, driven primarily by labor shortages, cosmetic standards, and market volatility. Beyond measurement, the tool supports practical intervention by helping producers identify actionable strategies such as improved harvest planning, alternative markets, and connections

to food recovery organizations. Governments can integrate tools like this into national FLW strategies to establish baselines, track progress toward SDG 12.3, and target investments toward the highest-impact loss points.

Food banks and agricultural recovery organizations, given their direct field relationships with producers, logistical knowledge of surplus flows, and experience navigating the economic realities of smallholder farming, should be included as formal participants in the design and implementation of national FLW strategies, not only as implementing partners but also as knowledge holders whose operational experience should inform policy development over time.

To be effective, national FLW strategies should include: (1) measurable targets for on-farm loss reduction, (2) engagement of producers in the design and implementation of programs, and (3) dedicated funding allocations for postharvest measurement, infrastructure, and food recovery efforts. A strategic approach that includes agriculture from the outset is essential to maximizing impact, aligning incentives, and ensuring a transition to a circular and efficient food system.

To maximize the impact of national FLW strategies that include agricultural recovery, governments should:

- Set measurable, sector-specific targets for on-farm loss reduction, including baselines tied to SDG 12.3 progress tracking.
- Engage agricultural producers directly in the design and implementation of FLW programs to ensure strategies reflect real farm-level barriers.
- Allocate dedicated funding for postharvest measurement, recovery infrastructure (e.g., cold storage, composting, anaerobic digestion), and food rescue logistics.
- Adopt standardized on-farm measurement tools to identify high-impact loss points and direct investment accordingly.
- Coordinate across ministries to integrate agricultural recovery into food security, climate, and rural development frameworks.

## 2.

### INCENTIVIZE ON-FARM DONATION WITH TAX POLICY

One of the most effective ways to encourage the recovery and distribution of edible, surplus food from the farm stage is through targeted tax incentives. Farmers frequently absorb the full costs of harvesting, storing, and transporting surplus food for donation, with little or no financial return. By offering tax credits, governments can compensate producers for these additional burdens and catalyze higher levels of participation in food recovery programs.

**Colombia** provides an instructive model. It enacted Ley 2380 de 2024, significantly strengthening its food donation framework.<sup>41</sup> The law establishes comprehensive tax incentives for food donations to registered food banks and hunger relief organizations, simplifies documentation requirements for donors, and creates clear liability protections to encourage participation by agricultural producers.<sup>42</sup> This law increases the value of donated food items that a business can claim as a credit from 25% to 37%.<sup>43</sup> The amendment also now allows businesses to claim a tax credit for the transportation costs and expenses of delivering food to a recipient, which the donor must itemize on the donation certificate.<sup>44</sup> Notably, the law explicitly covers donations of fresh and perishable agricultural products, addressing a long-standing gap in earlier legislation.<sup>45</sup> By providing both tax benefits and legal certainty, Colombia's approach offers a replicable model for governments seeking to incentivize farm-stage food recovery through the tax code.

In the **United States**, tax incentives for food donations exist at both the federal and state levels. US taxpayers are eligible to claim both a general tax deduction of the basis value of the food for all in-kind charitable contributions (capped at 10% of income for most corporate donors) and an “enhanced tax deduction” for food donations (capped at 15% of income for most corporate donors).<sup>46</sup> In addition to the higher deduction cap, the enhanced deduction permits a donor to deduct the lesser of (1) twice the basis value of donated food or (2) the basis value of the donated food plus one-half of the food’s expected profit margin (i.e., profit margin = fair market value minus basis value).<sup>47</sup> The enhanced tax deduction for food can offer deductions that are sometimes twice the value of the general deduction scheme for other in-kind donations, therefore providing extra incentive to donate. While this tax incentive applies nationwide, it is often underutilized by farmers, particularly smallholders, due to the complexity of tax filing, valuation requirements, and a lack of awareness. States such as California have tried to bridge this gap. California Revenue and Taxation Code § 17053.88.5 allows a 15% tax credit for the donation of fresh fruits or vegetables to food banks located in California based on the donated item’s weighted average wholesale value.<sup>48</sup> In addition, California Revenue and Taxation Code § 17053.12 provides a 50% tax credit for transportation costs associated with delivering donated agricultural products to food banks, further reducing barriers for growers and encouraging statewide food recovery.<sup>49</sup>

Despite their promise, tax-based incentives for agricultural donation may face structural challenges that can limit uptake. First, deductions are generally less impactful than refundable or transferable tax credits, particularly for small and mid-sized farms with limited taxable income. Second, valuation methodologies often require product-by-product assessment, creating administrative complexity and uncertainty for producers. In many cases, allowable valuations are calculated on the basis value, which may significantly underestimate the true cost of production for farmers, especially when labor, inputs, and opportunity costs are not fully captured. These barriers can make participation financially unattractive or procedurally burdensome, even where incentives technically exist.

To maximize effectiveness, tax incentives should :

- Prioritize credits over deductions where feasible, standardize valuation frameworks across crop categories, and allow simplified or proxy-based valuation methods that better reflect real production costs.
- Clearly define eligible food products and ensure postharvest surplus is explicitly included.
- Cover the costs of harvest as well as packaging, storage, and transport.
- Be easy to claim, ideally integrated into routine tax filing.
- Be promoted through outreach campaigns and farmer networks.

### 3.

## LIAISE BETWEEN FARMS AND FOOD RECOVERY ORGANIZATIONS

Governments can play a catalytic role in agricultural recovery by serving as conveners and coordinators between farmers and food recovery organizations. They can provide direct financial support for recovery operations and embed rescued agricultural products into formal social support systems. The examples below illustrate three complementary models: government-funded partnerships with food banks, institutionalized demand through healthcare and social services, and direct procurement programs that address farmers’ liquidity constraints in real time. These approaches recognize food recovery as a core component of resilient food systems and strengthen alignment between sustainability goals, hunger alleviation, and agricultural policy.

**Nuevo León, Mexico**, recently reformed its food donation law in 2022 to allow its Secretariat of Equality and Inclusion (*Secretaría de Igualdad e Inclusión*) to enter into agreements with food banks to rescue food from agricultural producers.<sup>50</sup> The Secretariat of Equality and Inclusion provides government funding to

cover the operational expenses that food banks incur when rescuing agricultural products.<sup>51</sup> The Secretariat of Agricultural Development (*Secretaría de Desarrollo Regional y Agropecuario*) liaises with the agricultural sector to encourage food donations, including receiving notice of crops that are available for donation.<sup>52</sup> Using the law's budgetary authority, in 2023 Nuevo León directed government funding to the Zero Hunger Program (*Programa Hambre Cero*) to address food insecurity and food waste in the state. To encourage private entities to donate (rather than waste) surplus edible food, the law includes two types of incentives: public recognition and tax benefits. Entities that donate the greatest amount of food to food banks are publicly recognized by the Secretariat of Equality and Inclusion. Entities that donate edible foods can deduct from their taxes 50-100% of the food's value, which is determined by the food bank upon receipt.<sup>53</sup> The reformed law further provides for the allocation of public funds for the food bank's operational expenses related to agricultural food recovery.<sup>54</sup>

The National Food Security Project in **Israel** was created as a partnership between the Ministry of Social Affairs and Social Services, Eshel Jerusalem, and Leket Israel to deliver surplus agricultural products to families in need. The project earmarks a portion of its budget for distributing rescued agricultural products.<sup>55</sup> For example, as of 2021 it provides monthly home delivery of NIS 250 worth of rescued fruits, vegetables, and dry goods to approximately 10,800 food-insecure families, part of a comprehensive NIS 500 monthly food support package that also includes a supermarket food credit.<sup>56</sup> The project relies on government support for necessary infrastructure (e.g., cold storage) and carefully coordinated logistics. The initiative allows clinicians and social workers to prescribe fresh produce to food-insecure patients managing diet-related conditions, with fulfillment supported by Leket Israel's national agriculture recovery and distribution network. By embedding rescued agricultural products into formal healthcare-adjacent and social support systems, Israel demonstrates how public investment can simultaneously reduce on-farm loss, improve nutrition outcomes, and strengthen the economic case for agricultural recovery through predictable institutional demand.

Incentive structures, including upfront payments or grants, can address farmers' liquidity constraints, especially during peak harvest seasons when donation opportunities coincide with high operating costs. Governments may consider direct cost-coverage models that reimburse the operational expenses incurred by food banks when recovering agricultural products (e.g., harvest labor, packaging, and transportation), reducing the financial barrier to recovery at the point it is actually needed. In the **United States**, the Emergency Food Assistance Program (TEFAP) Farm to Food Bank Project allows USDA funds to be used for direct harvesting costs (e.g., labor, packaging) and transportation costs of farm products to be donated to food banks, offering a model of how financial support can be decoupled from tax time and delivered when farmers need it most.<sup>57</sup> This model demonstrates how financial support can be administered proactively rather than retroactively. In FY2024, the project disbursed approximately \$3.77 million in grants to support agricultural food recovery efforts across 27 states, demonstrating meaningful national reach and the scalability of this approach.<sup>58</sup>

Another US example is the USDA's Farmers to Families Food Box Program, which operated from 2020 to 2021 as part of the country's COVID-19 pandemic response.<sup>59</sup> The program purchased fresh produce, dairy, and meat directly from farmers and distributors affected by market disruptions and delivered more than 173 million food boxes to food-insecure households nationwide.<sup>60</sup> Importantly, the program covered aggregation, packaging, and transportation costs, providing farmers with immediate revenue while preventing large volumes of surplus food from being wasted. Although designed as an emergency intervention, the program illustrates how direct procurement and logistics funding can rapidly mobilize agricultural surplus for hunger relief, offering lessons for future recovery programs that aim to stabilize farm income while reducing food loss.

To maximize the impact of government support for agricultural recovery, governments should:

- Act as conveners between farmers and food recovery organizations, facilitating partnerships and advance notice systems for surplus crops.
- Provide direct cost coverage (e.g., harvest labor, packaging, transport) to instantly pay farmers and address their liquidity constraints rather than relying solely on retroactive tax incentives.

- Use direct procurement models to purchase surplus agricultural products and channel them to food-insecure households, covering aggregation and logistics costs.
- Embed rescued agricultural products into formal social support and healthcare-adjacent systems to create predictable institutional demand and strengthen the economic case for recovery.

## 4.

### FUND GRANTS FOR RECOVERY INFRASTRUCTURE

Infrastructure is a foundational component of an effective food recovery systems. Gaps in cold storage, transportation, and aggregation capacity often cause food loss in the first place and simultaneously limit recovery of surplus crops. In the absence of cold storage, rural transportation, and regional distribution facilities, large volumes of the food grown in remote agricultural regions never reach markets or food banks. Public investment is therefore essential to fill these infrastructure gaps and enable farmers to preserve and donate surplus food that would otherwise be lost. Strategic capital support, whether through direct grants, low-interest loans, or blended finance, can expand recovery capacity, strengthen rural supply chains, and improve resilience to climate and market shocks while reducing loss of highly perishable foods.

The government of **Argentina** has engaged with private-sector actors to support food recovery innovation. For example, in 2019 the federal government launched a contest to grant nonreimbursable financing for innovative food waste solutions in Argentina’s horticultural sector, covering harvest, sorting, packing, and cold storage innovations.<sup>61</sup> This grant was administered under the government’s National Food Loss and Waste Reduction Program and in partnership with the Inter-American Development Bank through its “#SinDesperdicio” platform.<sup>62</sup> This public-private partnership supports emerging solutions to food waste and food recovery throughout the country. This illustrates how targeted, competitive grants can catalyze scalable solutions in food recovery infrastructure when paired with domestic or international financing and technical assistance. Similarly, in the **United Kingdom** the Department for Environment, Food & Rural Affairs (DEFRA) launched the Resource Action Fund in 2018 to support circular economy infrastructure projects, including food waste prevention and recovery through investments in storage and infrastructure.<sup>63</sup> The fund illustrates how national governments can directly support recovery infrastructure while simultaneously building capacity in nonprofit and charitable food redistribution systems.

In **Mexico** the Secretariat of Welfare (*Secretaría de Bienestar*, formerly SEDESOL) partnered with Banco de Alimentos de México (BAMX) to install cold storage units, which were cofinanced by local governments and private donors.<sup>64</sup> These units extend the shelf life of perishable goods and enable daily food recovery from regional farming cooperatives.<sup>65</sup> BAMX has also collaborated with logistics providers to consolidate pickup routes and improve the cost efficiency of food rescue operations.<sup>66</sup>

In the **United States** several federal programs support infrastructure investments relevant to both food loss prevention and food recovery, though most are primarily designed to help producers get more food to market (and thus reduce food loss) rather than to specifically support donation. Administered by the USDA’s Farm Service Agency, the Farm Storage Facility Loan (FSFL) Program provides low-interest loans for producers to build or upgrade storage facilities, including cold storage, for eligible commodities such as fruits, vegetables, dairy, and meat.<sup>67</sup> Loan terms vary from three to 12 years, with a maximum loan amount of \$500,000.<sup>68</sup> A microloan option up to \$50,000 is available, requiring only a 5% down payment and reduced documentation, benefiting small and midsized farms.<sup>69</sup> While the FSFL is primarily intended to preserve food for sale, the same cold storage investments that extend shelf life and reduce food loss can also reduce spoilage before a food recovery organization is able to arrange pickup.

The Rural Energy for America Program (REAP), also in the **United States**, offers grants and guaranteed loans to agricultural producers and rural small businesses for renewable energy systems and energy efficiency

improvements, including for the purchase and installation of energy-efficient equipment such as refrigeration units and cold storage facilities, which are critical for preserving perishable food items for donation.<sup>70</sup> While REAP has not been explicitly directed toward food recovery, its eligible uses overlap substantially with the infrastructure needs of farms engaged in donation. Governments could strengthen this alignment by issuing guidance or preference criteria that specifically encourage applications supporting food recovery goals.<sup>71</sup>

Finally, the Resilient Food Systems Infrastructure Program, also in the **United States**, provides funding to strengthen the middle of the food supply chain, including support for infrastructure such as cold storage, processing facilities, and distribution networks.<sup>72</sup> The program aims to build resilience in food systems by providing markets to small farms and food businesses.

Governments should prioritize on-farm infrastructure investments that prevent loss in the first place (such as on-farm cold storage, drying facilities, and aggregation points) before funding downstream recovery infrastructure. Loss prevention yields compounding returns: food saved at the farm stage need not enter the recovery chain at all. Governments should prioritize efforts that assist farmers in getting the most produce to market, avoiding upstream food loss altogether. However, many factors can lead to FLW. Governments should also ensure grantmaking and low-interest financing mechanisms are in place to specifically address the logistical bottlenecks in food recovery such as refrigeration and last-mile transport for perishable agricultural products. Programs that enable development of cold storage, energy-efficient transport, and aggregation infrastructure at the farm or regional levels can dramatically increase the volume of food recovered and improve the viability of donation for producers. By investing in the physical and operational backbone of food recovery, public agencies can create a lasting impact on both food security and food system sustainability.

Low-cost value addition methods such as solar dehydrators, simple processing, and fermentation, are increasingly used by food banks not only to reduce loss from highly perishable recovered produce but as a distribution strategy. Extending shelf life allows nutritious food to travel farther and reach more beneficiaries over longer periods. Policymakers considering investment in food bank processing capacity should understand this dual function: the same infrastructure that reduces waste also solves the last-mile logistics problems of food recovery.

To maximize the impact of government support for infrastructure investments on food loss and recovery, governments should:

- Prioritize on-farm investments that prevent loss in the first place, including cold storage, drying facilities, and aggregation points, before funding downstream recovery infrastructure.
- Establish dedicated grant programs or preferential loan terms for food recovery-specific infrastructure, including last-mile refrigerated transport and food-safe storage at the cooperative level.
- Issue clear guidance allowing farmer infrastructure funding programs to be used for food recovery purposes, with criteria that specifically allow and encourage applications supporting donation or food rescue.

## 5.

### PRIORITIZE AND IMPLEMENT FARMER EDUCATION

Education and technical assistance are critical to reducing on-farm loss—especially for small and mid-sized producers who may lack information on donation practices, food safety standards, or alternative markets. When designed well, farmer education not only minimizes postharvest waste but also strengthens producer engagement with food recovery networks, building trust and capacity from the ground up.

In **Ireland**, FoodCloud's Growers' Project,<sup>73</sup> funded by the Department of Agriculture, Food and the Marine, piloted a training initiative with horticultural producers to understand surplus potential.<sup>74</sup> Early research by the Circular Bioeconomy Research Group at Munster Technological University revealed where produce was lost during harvest.<sup>75</sup> Farmers received compensation to recover surplus goods, and 30 tonnes of produce was redistributed during the pilot,<sup>76</sup> demonstrating how combining technical guidance with logistical support reduces waste and builds farmer buy-in.

Education campaigns in **Colombia** and **Canada** have increased farmer participation in donation and gleaning programs. In **Colombia**, the *Rescate de Alimentos* initiative, led by the Ministry of Agriculture and implemented in partnership with local food banks, equips producers with practical training on surplus identification, hygienic handling, sorting for donation, and detailed record keeping.<sup>77</sup> Similarly, in **Canada**,<sup>78</sup> organizations such as Second Harvest and Provision Coalition host food loss workshops and webinars tailored to producers and processors.<sup>79</sup> These organizations also provide one-on-one diagnostics to identify inefficiencies in harvesting and packing operations.<sup>80</sup> Their collaborative consulting approach helps farms pinpoint where value is being lost and how small operational shifts can turn surplus into donation-ready food.

Certification programs offer another institutional entry point for farmer education. Programs such as GLOBALG.A.P.,<sup>81</sup> a globally recognized private-sector standard covering food safety, environmental sustainability, and worker welfare across agricultural supply chains, are already embedded in how many producers operate and access markets. Incorporating food loss prevention modules into these frameworks (covering surplus identification, harvest planning, and donation protocols) would normalize FLW reduction as a baseline expectation rather than an optional add-on. It would also embed it directly into training and audit structures that farmers already navigate.

To scale these benefits, governments should:

- Fund regional training hubs that combine classroom instruction with on-farm technical support.
- Issue national guidance on donation best practices, food recovery safety standards, and logistics tailored to farms and producers.
- Incorporate food loss prevention into certification programs, such as the USDA's Good Agricultural Practices (GAP) certification program<sup>82</sup> or GLOBALG.A.P.
- Tie subsidies or grants to completion of FLW and food recovery educational modules, ensuring recipients are equipped to put infrastructure into action.
- Support farmer-to-farmer knowledge exchange, leveraging the practical expertise of early adopters to catalyze broader change.

Farmer education, when coupled with logistical and financial support, can empower producers to transition from uncertainty to active participation in food recovery.

## 6.

### SUPPORT THIRD-PARTY GLEANING BY NONPROFIT ORGANIZATIONS

Community gleaning is one of the oldest and most cost-effective ways to recover surplus food at the farm level. It simultaneously reduces food waste, strengthens local food security, and supports community engagement with agriculture. Despite its benefits, gleaning remains underutilized due to legal uncertainty, logistical constraints, and a lack of investment in scaling efforts.

**Ireland** offers a compelling model. The Gleaning Network, coordinated by FoodCloud with support from the Department of Agriculture, Food and the Marine, provides logistical and regulatory support for gleaning operations.<sup>83</sup> The program not only connects food banks with surplus produce but also ensures compliance

with food safety protocols, organizes volunteer harvest events, and collects data on recovered volumes.<sup>84</sup> This data-driven approach helps quantify the impact of gleaning and inform the development of broader agricultural waste reduction policy in Ireland.

In **Brazil**, Banco de Alimentos São Paulo launched the *Colheita Urbana* (“urban gleaning”) initiative in the late 1990s. The initiative operates mobile teams that collect surplus, nutritious produce, often cosmetically imperfect or unsold, from peri-urban farms, wholesale markets, and retail outlets.<sup>85</sup> The mobile teams conduct rapid field gleaning, focusing on crops such as leafy greens, roots, and fruits.<sup>86</sup> This produce is then directly redistributed to social assistance institutions.<sup>87</sup> The initiative is supported in part by São Paulo’s Municipal Food Security Program and includes contracts with municipal markets to streamline redistribution.<sup>88</sup> This model demonstrates how cities can integrate gleaning into local food resilience planning and reduce fresh food insecurity in urban areas.

To fully realize the potential of gleaning as a food recovery tool, governments should address both the legal framework and funding mechanisms. Clear liability protections should explicitly cover gleaning activities, shielding farmers and volunteers from undue risk when donating in good faith.<sup>89</sup> In the **United States** the Bill Emerson Good Samaritan Food Donation Act provides liability protection for food donors and nonprofit organizations that receive and distribute donated foods. It also goes further by explicitly defining and protecting gleaning as a covered activity. The act defines a “gleaner” as a person who harvests “for free distribution to needy individuals any of the following: (A) an edible crop from a farm after the crop has been harvested by the farmer; or (B) wholesome and edible foodstuffs from a retailer.”<sup>90</sup> Critically, the act extends liability protection not only to food donors but also to property owners who permit gleaning, providing that any person who “allows the collection or gleaning of donations on property owned or occupied by the person by gleaners, or paid or unpaid representatives of a nonprofit organization” shall not be subject to civil or criminal liability except in cases of gross negligence or intentional misconduct.<sup>91</sup> By shielding all parties (i.e., farmers, volunteer gleaners, and the organizations coordinating them) from civil and criminal liability when acting in good faith, the act creates the legal certainty to help scale gleaning. Countries without equivalent protections should enact similar legislation that explicitly names gleaning as a covered activity and extends protection to the farmer relating to both the donated food and the premises where gleaning takes place. Supporting formal partnerships between gleaning networks, food banks, and public institutions is a pragmatic and scalable step toward reducing on-farm food loss, improving community nutrition and advancing circular economy principles.

To realize gleaning’s potential as a food recovery tool, governments should:

- Enact or clarify liability protections that explicitly name gleaning as a covered activity, extending protection to farms, third-party organizations, and individual volunteers.
- Fund or contract with established gleaning networks to coordinate volunteer operations, ensure food safety compliance, and manage logistics between farms and food distribution partners.
- Include gleaning as an eligible and recognized activity in food recovery grant programs and national FLW strategies, giving it equivalent status to other recovery approaches.
- Collect data on gleaned volumes and outcomes to build the evidence base that informs program expansion and policy development.

## 7.

### SUPPORT MARKET DEVELOPMENT FOR UPCYCLED FOODS

Farms are not only sources of food loss but also potential nodes of innovation and circularity. By transforming cosmetically imperfect surplus or downgraded produce into value-added products, farmers and processors can participate in upcycled food markets that capture revenue while preventing waste. Upcycled foods

are products made using ingredients that would otherwise be lost, wasted, or undervalued such as surplus foods, cosmetically imperfect produce, or agricultural byproducts, while meeting food safety and quality standards.<sup>92</sup> By transforming this produce into upcycled food products, farmers and food businesses can create new revenue streams while diverting food from loss. Yet despite the promise of upcycling, barriers such as inadequate infrastructure, a lack of investment, restrictive procurement standards, and a lack of market confidence often prevent these solutions from scaling. Governments can support FLW prevention by supporting innovation to keep food in the market, derisking early investment, and aligning public procurement with circular economy goals.

In the **United States** a growing ecosystem of upcycled food startups has emerged, supported by both public funding and private investment. Companies such as Outcast Foods, which dehydrates surplus produce into nutritional powders,<sup>93</sup> and The Ugly Company, which converts unsellable fruit into snack products,<sup>94</sup> demonstrate how commercial innovation can redirect farm-stage loss into new saleable products at scale. The Upcycled Food Association developed a third-party certification system that verifies whether products are truly made from inputs that would have otherwise gone to waste, increasing buyer and consumer trust in the category.<sup>95</sup> At the federal level, the USDA's Value-Added Producer Grant Program provides direct financial assistance to producers seeking to process, market, or otherwise enhance the value of their crops, including by converting surplus into new formats.<sup>96</sup>

Globally, organizations like Agricycle work with smallholder farmers to upcycle food that would otherwise be wasted by “manufacturing and distributing solar dehydrator technologies that enable food to be preserved for longer, purchasing the resulting products directly from cooperatives, and creating brands to sell these products in global markets.”<sup>97</sup>

Governments can help unlock the potential of these solutions by developing public procurement preferences for upcycled products. Just as government purchasing policies increasingly include sustainability criteria, procurement guidelines can be adapted to allow or prefer products made from downgraded or otherwise wasted food, especially in institutional settings such as schools, hospitals, and food assistance programs. Public agencies should also adjust aesthetic standards in food purchasing contracts to accommodate imperfect produce, removing unnecessary barriers to market entry for surplus-based goods, not simply allowing them but actively preferring them.

Upcycling surplus food is one of the most promising frontiers in the fight against food loss, but it requires deliberate public support to become economically viable at scale. Policies that connect surplus with value-added processing, lower the cost of innovation, and create institutional markets that prioritize upcycled products will help realize the full potential of this approach.

To build a policy environment that enables upcycling at scale, governments should:

- Provide grants, co-investment, or favorable loan terms for small-scale producers and cooperatives seeking to process imperfect or downgraded surplus into shelf-stable, value-added, or upcycled products.
- Revise public procurement standards to not merely permit but to actively prefer upcycled and surplus-derived products in institutional purchasing, including school meals, hospitals, and food assistance programs.
- Recognize third-party upcycled food certification schemes in public procurement criteria, building buyer and consumer trust in the category.

Governments can support circular solutions beyond human consumption, particularly for farms with integrated systems. Incentivizing the safe use of food scraps for animal feed is considered a method of food waste reduction under international standards. As another alternative, when food cannot go to humans or animals, ensuring opportunities for codigestion in anaerobic digestion facilities can help ensure that food unfit for consumption is still utilized productively and kept out of landfills or waste disposal. With proper regulatory support and investment, using food scraps for animal feed or processing food waste on farms could offer additional income and sustainability benefits for producers facing high levels of unavoidable loss.

Several countries have modernized regulations to enable these practices. In **Japan** the Ecofeed program promotes the conversion of food byproducts and unsold food into livestock feed through standardized safety protocols and government certification, reducing reliance on imported feed while diverting large volumes of food waste from landfills.<sup>98</sup> **South Korea** operates mandatory food waste separation systems that channel suitable organic material into animal feed and composting streams, supported by municipal collection infrastructure and processing facilities.<sup>99</sup> Within the **European Union**, updated animal byproduct regulations permit certain former foodstuffs (such as bakery surplus and vegetable trimmings) to be safely used in feed, provided they meet traceability and treatment requirements.<sup>100,101</sup>

Anaerobic digestion (AD) offers an additional pathway for unavoidable losses, and it can provide an economic opportunity for farmers when operated in a way that supports on-farm processing. In countries such as **Denmark**<sup>102</sup> and **Germany**,<sup>103</sup> farm-scale and cooperative AD facilities convert agricultural residues and food waste into biogas for energy generation. In **Denmark** the national biogas premium scheme, administered by the Danish Energy Agency, provides per-unit financial payments (*tilskud*) to farmers and cooperatives that generate electricity or heat from biogas, making farm-scale and cooperative AD facilities economically viable.<sup>104</sup> In **Germany** the Renewable Energy Sources Act (*Erneuerbare-Energien-Gesetz*, or EEG)<sup>105</sup> guarantees fixed feed-in tariffs for electricity generated from biogas, while federal capital grants are available to help farms and cooperatives construct or upgrade digestion facilities. Both countries also permit digestate (the nutrient-rich byproduct of the AD process) to be returned to agricultural land as fertilizer, closing the nutrient loop, reducing reliance on synthetic inputs, and improving the overall economics of on-farm waste management.

To unlock these opportunities, governments should clarify animal feed safety rules and standards for food scraps, invest in processing infrastructure, and provide technical assistance to farmers and cooperatives seeking opportunities to build facilities. Integrating animal feed and AD pathways into national FLW strategies ensures that even food not suitable for donation contributes to resilient, low-waste agricultural systems.

To unlock circular pathways for unavoidable on-farm food loss, governments should:

- Clarify feed safety standards for food scraps and former foodstuffs, specifying approved categories, traceability requirements, and treatment protocols to reduce regulatory uncertainty for farms and processors.
- Provide capital grants, subsidized loans, or feed-in tariffs to support construction of on-farm or cooperative-scale AD facilities, with digestate return to fields as an approved use.
- Integrate animal feed and AD explicitly into national FLW strategies as recognized, measurable reduction channels.
- Offer technical assistance to farmers and cooperatives pursuing circular waste-to-feed or waste-to-energy systems, particularly in regions with high levels of unavoidable loss.

In many agricultural communities, surplus food has little to no commercial value once it exceeds immediate demand or falls outside buyer specifications. This lack of downstream markets makes it economically irrational for farmers to harvest or transport food that may ultimately be wasted. Surplus exchange programs, including barter arrangements, in-kind input exchanges, marketplaces, and alternative market access pathways present a promising solution. They allow producers to convert otherwise unmarketable crops into tangible value, whether through agricultural inputs such as seeds, fertilizers, and equipment or through access to shelf-stable goods, logistics support, and other community resources. These reciprocal arrangements help close input gaps while preserving edible food that might otherwise be lost. When structured effectively, such systems improve food security, support farm productivity, and create circular value chains that build resilience across the agricultural sector. Barter and input exchange programs typically operate at local or subnational levels, often requiring community coordination rather than national mandates. National governments can play a supporting role by creating enabling legal frameworks, expressing support for these practices, and incorporating these approaches into food loss reduction strategies while leaving implementation to subnational actors and civil society.

One model comes from the **Philippines**, where the Department of Agriculture implemented *Kadiwa ni Ani at Kita*, a government-run direct farm-to-consumer marketplace launched in 2019 and significantly expanded during the COVID-19 pandemic.<sup>106</sup> Offered in three formats (physical markets, mobile rolling stores (“Kadiwa on Wheels”), and a digital platform), the program connects farmers and fisherfolk directly to buyers, bypassing intermediaries that often leave surplus produce without a viable outlet. By providing farmers with reliable, accessible selling channels, Kadiwa reduced the volume of perishable produce left unharvested or discarded when traditional supply chains were disrupted.<sup>107</sup> The program partnered with local government units to coordinate logistics, channeling surplus from isolated farms to urban markets, school feeding programs, and community kitchens. By 2021 Kadiwa had benefited more than 41,000 farmers, demonstrating how government-coordinated market access can simultaneously reduce farm-stage loss and improve food security.<sup>108</sup>

In **Ghana** the Ministry of Food and Agriculture supported AgroCenta, a mobile platform designed to link smallholder farmers to buyers and input providers.<sup>109</sup> The platform improves price transparency and provides farmers with access to formal markets for crops that might otherwise go unsold.<sup>110</sup> In-kind arrangements may allow farmers to offset the cost of inputs against their produce, providing a pathway to climate-smart agricultural tools in regions vulnerable to drought. AgroCenta has become a model for integrating market access, agricultural finance, and food loss reduction.<sup>111</sup>

Similarly, in **Kenya** community food hubs supported by nongovernment organizations and county governments have trialed barter-inspired procurement models where surplus farm output is exchanged for services such as transportation or for credits toward farm inputs.<sup>112</sup> These hubs often channel collected produce into school feeding programs, linking agricultural recovery with local nutrition initiatives.<sup>113</sup> Such circular procurement schemes build both agricultural and social resilience, particularly in areas where cash markets are fragmented or seasonal.

Barter models operated through food banks offer a further variation on this model, with documented co-benefits for farmers. The Rise Against Hunger **Philippines** program provides farmers with shelf-stable goods in exchange for unsold fresh produce, creating commercial-equivalent value where none previously existed.<sup>114</sup> The model also converts what would otherwise be empty return journeys into productive logistics loops, using backhaul capacity to deliver farm inputs (fertilizer, seeds, packaging)<sup>115</sup> directly to producers. This is particularly valuable for farmers who lease rather than own land and operate under profit-sharing arrangements that can claim up to 60% of their earnings. Any reduction in production costs directly

strengthens their viability. Governments can support and scale such models by funding the logistics and processing infrastructure (cold storage, vehicles, packaging capacity) that makes barter and backhaul arrangements economically sustainable.

Fundación Saciar in **Colombia**, whose REAGRO program recovers fruits and vegetables directly from producers, composts the inedible organic material that passes through its facility and returns sacks of homemade compost to those same farmers before each pickup, unloading inputs before loading recovered food.<sup>116</sup> In 2024 the program converted nearly 24,000 kilograms of organic waste into compost, closing the nutrient loop and reducing farmer input costs at no charge.<sup>117</sup>

By converting surplus into a tradeable asset, barter systems help eliminate the zero-value ceiling that currently deters recovery. They reduce economic risk for farmers, improve access to inputs or other products beneficial to farmers, and generate social returns through redistribution. Scaling these programs will require public investment, legal clarity, and infrastructure to support valuation and traceability. When embedded within national food security and agricultural development strategies, barter and input exchange models can meaningfully reduce food loss while strengthening rural economies and community resilience.

To support barter and input exchange programs for food loss reduction, governments should:

- Issue clear tax guidance treating small-scale agricultural barter as a nonmonetary in-kind exchange that does not create disproportionate income tax obligations.
- Invest in or subsidize digital platforms that enable farmers to log, value, and trace barter transactions for compliance, tax documentation, and program accountability.
- Include barter and exchange-based recovery as eligible activities in national FLW strategies, alongside donation and processing pathways, and provide model frameworks that subnational governments and civil society can adapt for local implementation.

## CONCLUSION

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On-farm food loss represents one of the most immediate and underutilized opportunities to address hunger, climate impacts, and farmer livelihoods simultaneously. Governments have a critical role to play in reducing food loss and scaling agricultural recovery through integrated policy frameworks that invest in infrastructure, align tax and procurement incentives, support farmer education, and strengthen partnerships between producers and food recovery organizations. When designed cohesively, these interventions can convert surplus into social, environmental, and economic value.

To achieve this, governments should take explicit steps to support farm-stage loss reduction and recovery such as including them in national strategies, offering incentives and dedicated government support and funding, supporting farmer education, and improving market development for circular uses for food scraps. Policymakers should prioritize prevention of food loss by helping farmers get more food to market while also ensuring that unavoidable surplus is rapidly redirected to human consumption, value-added processing, animal feed, or energy recovery. Acting now to embed agricultural recovery into food system policy will not only advance food security and emissions reduction goals but also help build more resilient, equitable, and efficient food systems for the future.

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