



Postharvest Loss Alliance for Nutrition PLAN

Too much nutritious food is lost or wasted

Healthy diets are diverse diets, including vegetables, fruits, legumes, animal-source foods like fish and eggs, as well as staples like cereals and starchy roots. But many of these nutritious foods are lost and wasted in vast amounts – particularly the most perishable foods in frontier and emerging markets. This contributes to low availability and affordability, driving poor dietary diversity and malnutrition.

A meta-analysis of six sub-Saharan African countries showed that the highest post-harvest losses included fruits and vegetables ($56 \pm 25\%$), and fish ($27 \pm 14\%$)¹. Many of these supply chains are dominated by small and medium sized enterprises (SMEs) that produce, distribute or sell up to 70% of nutritious foods to domestic markets in Africa². These SMEs especially face challenges in addressing food loss and waste.



FOOD LOSS

Occurs before food reaches the market – higher levels in low- and middle-income countries.



FOOD WASTE

Occurs in the market and household – higher levels in high-income countries

Creating PLAN

In 2016, the Global Alliance for Improved Nutrition (GAIN) and its partners spotted a gap in postharvest loss interventions targeted to a) nutritious foods and b) working in the supply chain beyond the farm. The **Postharvest Loss Alliance for Nutrition (PLAN)** was launched in Nigeria. While a significant amount of food loss occurs on-farm, many agriculture organizations are making progress with farmers to reduce these losses. PLAN adds value by supporting SMEs post-farmgate. It brings together public and private sector actors to collectively reduce loss of nutritious foods, boosting livelihoods of suppliers while increasing availability and affordability of nutritious and safe foods for consumers.

#NoFoodLoss

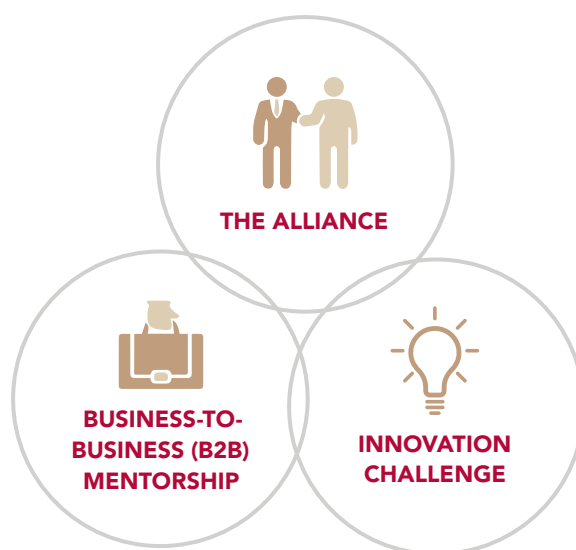
PLAN tackles three key challenges for SMEs with three components

Three key challenges

1. Lack of coordination among supply chain actors
2. Poor access to the technical expertise needed to adopt improved technologies and scale local innovations, particularly cold chain, crating and processing
3. Insufficient access to the financial resources needed to facilitate this adoption and scale

Three PLAN components

The PLAN model has three components: improving coordination among actors within a given food supply chain through the **Alliance**, building capacity and encouraging SMEs to adopt improved practices and technologies through the **Business-to-Business (B2B) mentorship**, and fostering new innovations in post-harvest loss technology through **Innovation Challenges**. PLAN also financially supports early adopters and innovators of improved technologies through grants, subsidies or by connecting the business with investors. The Global PLAN platform acts as a central knowledge and partnership hub, providing PLAN country members access to global knowledge and expertise in food loss and waste management. GAIN created the Global platform in collaboration with the Global Cold Chain Alliance, the World Foods Logistics Organization, USDA, IFPRI and the Global Knowledge Initiative, each of which provided technical assistance and shared best practices in postharvest loss management. GAIN has implemented PLAN in three countries. PLAN Nigeria (N-PLAN) was launched in 2016 with a focus on tomatoes; PLAN Indonesia (I-PLAN) launched in 2017 with a focus on sea fish; and in 2018, PLAN Ethiopia (E-PLAN) was launched with a focus on tomatoes.



What have we achieved?

PLAN Nigeria

N-PLAN created a multi-sectoral alliance with over 230 members from across the tomato supply chain, including traders, growers, aggregators, distributors, government representatives, banks, and local universities. It provided over 30 capacity-building opportunities, allowing stakeholders to adopt technologies such as cold storage units, reusable plastic crates (RPCs) and best handling practices. N-PLAN participants interviewed as part of the external assessment reported significant impacts.

Not only did N-PLAN create an opportunity for trainings, it also linked actors from different sectors who would otherwise remain unconnected, helping to forge business partnerships and greater adoption of innovations across the supply



chain. For example, N-PLAN co-invested in 17,000 RPCs, but influenced the purchase of over 120,000. It also implemented 15 formal B2B mentorships but helped facilitate over 50 business member connections which helped improve coordination and efficiency across the tomato supply chain.

Some PLAN Nigeria members saw a reduction in post-harvest losses of tomatoes from 35-40% to below 10% after adopting RPCs.

A key outcome of the N-PLAN was the creation of a privately led and funded business association focused on developing the cold chain in West Africa. The Organization for Technology Advancement of Cold Chain in West Africa (OTACCWA) was registered with the Corporate Affairs Commission in Nigeria in 2018. OTACCWA has over 120 private members and became an affiliate partner of GCCA in 2020.

PLAN Indonesia

I-PLAN, designed with significant support from fish supply chain actors, the Ministry of Health (MOH) and the Ministry of Marine Affairs and Fisheries (MMAF), has over 350 members from the public and private sector. It has helped to align the priorities of the MOH and MMAF on increasing the sale and consumption of fish by identifying local innovations to reduce loss and waste.

I-PLAN has conducted two Innovation Challenges, receiving over 504 proposals for cold chain innovations, last mile distribution and processed fish foodstuffs. The team provided the Innovation Challenge finalists with technical assistance to improve their innovation as well as business support to ensure their innovations could be adapted to meet market and user demands.

The first Innovation Challenge winner, an ice substitute called Maslaha Cold Bank, used I-PLAN's support to reduce the size of the product, based on user feedback, as well as to obtain the intellectual property rights. Within 6 months, Maslaha sold over 14,400 cold banks to fish supply chain actors.

Additionally, through the I-PLAN Alliance, Maslaha's owner was introduced to a distributor; this partnership has increased the business's reach into new districts and has generated approximately 60% of Maslaha's total sales. In 2020, Maslaha received over \$500,000 from a private investor and is working on finalising a contract with the Ministry of Marine Affairs and Fisheries to distribute the product across Indonesia.

I-PLAN received over 504 innovation proposals and supported the sale of over 13,000 fish-based food and 20,000 cold chain products.



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PLAN Ethiopia

Despite being the youngest PLAN country, E-PLAN has already built a multi-sectoral alliance with over 170 public and private actors working across the tomato supply chain. Collaborating with local universities, E-PLAN has provided 145 SMEs and tomato farmers with specialized postharvest management training, while encouraging the adoption of RPCs. E-PLAN has co-invested with local business associations in over 19,000 RPCs and is conducting a large-scale market awareness campaign on the benefits of replacing wooden crates with RPCs. Further, E-PLAN has encouraged the Ministry of Agriculture to engage with the private sector around food loss and waste challenges, while urging it to ease access to finance for businesses in its “homegrown economic reform agenda” for the agriculture sector.



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Reducing loss of nutritious foods contributes to multiple global goals

Programmes like PLAN can help support more nutritious, efficient and sustainable food systems thereby contributing to multiple Sustainable Development Goals (SDGs). Food loss and waste contributes to greenhouse gas emissions and puts additional pressure on the planet’s limited land and water resources. By addressing food loss and waste, PLAN helps reduce agricultural impact on the environment.



Additionally, farmers and SMEs working across the supply chain can increase their income by reducing the loss and waste of their valuable produce. Tackling post-harvest loss and waste not only directly contributes to making nutritious food more available and affordable – thereby supporting more diversified diets; it is also good for livelihoods and the planet.

Endnotes

- Affognon, Hippolyte; Mutungi, Christopher, Sanginga, Pascal and Borgemeister, Christian (2015). Unpacking Postharvest Losses in Sub-Saharan Africa: A Meta-analysis. World Development Vol. 66, pp. 49-68. Nairobi, Kenya.
- Demmler KM. The Role of Small and Medium-sized Enterprises in Nutritious Food Supply Chains in Africa. Global Alliance for Improved Nutrition (GAIN). Working Paper Series #2. Geneva, Switzerland, year. DOI: <https://doi.org/10.36072/wp.2>