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SUSTAINABLE
DEVELOPMENT
GOALS



UNIDO AND FOOD SECURITY

UNIDO Directorate of SDG Innovation and Economic Transformation

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Global Context

Food systems face unprecedented threats due to multiple crises: COVID-19, violent conflicts, economic downturn (particularly domestic food price inflation), and devastating climate extremes. **These crises prompted failures in global food systems and along the global food supply chains**, fueling hunger and limiting livelihoods resulting in the **worst food crisis in human history**.

The progress in global food security front is being reversed. Covid-19 has added a staggering 200 million people to the pre-Covid global food insecure population, violent conflict account for 95 percent of displacement (94 percent of whom reside in climate vulnerable area), and 1.7 billion people affected by climate extremes, while inflation has pushed billions out of the reach of healthy diets. According to the State of Food Security and Nutrition in the World 2023, between 691 and 783 million people faced hunger in 2021, with a sharp increase (122 million) after the COVID-19 outbreak. In 2022 about 2.4 people were either moderately or severely food insecure and more than 3.1 billion were not able to afford a healthy diet. Projections are that nearly 670 million people will still be facing hunger in 2030 – 8% of the world population, which is the same as in 2015 when the Millennium Development Goals (MDGs) era ended. By 2050, we will need to produce 60 per cent more food to feed a world population of 9.3 billion.

The global food security situation has laid bare a **gaping gender gap** with **31.9 percent food insecure** being women, compared with **27.6 percent** men (60 percent of the world's hungriest people are women and girls). This gender food insecurity gap is worse than it was 2020, and will take the world four generations (132 years equivalent) to attain gender parity in food security, assuming concerted and steady global action on hunger, malnutrition, and food insecurity.

While the number of food insecure population is skyrocketing, more food is wasted at the same time. Our global food systems use 70 percent of the water resources, responsible for one-third of anthropogenic greenhouse gas (GHG) emissions, and threaten over 86 percent of the global species at risk of extinction, but wastes 1 billion tonnes of food every year – an alarming over 30 percent of all food produced globally.

Post-harvest losses have compounded the food security problem, and worsened food losses. More than 40 percent of global food loss occurs throughout commodity supply chains at the post-harvest level (between harvest and the consumer) in many developing economies. In some developing countries, smallholder farmers lose 40 percent of their harvest every year, loses particularly grain production which account for 70 percent of all calories



consumed. These losses have double burden on the planet and people alike, and diminish the critical role of agriculture in the global socioeconomic development agenda. However, the losses reflect the strong hold of the linear industrial production and economic models, and a need for circular system transformation model.

Agriculture and food sectors are critical to glocal (global & local) socio-economic systems. **Agriculture employs around one third of the total labour force in many regions.** Hope for wellbeing of the world's poorest lie in agriculture sector whose growth is two to four times more effective in raising incomes among the poorest compared to other sectors. Similarly, the history of development strategy have carved a special place for agriculture's roles in industrialization and economic performance particularly inclusive and sustainable industrial development (ISID), and this fact governments have recognized as means to transforming food systems through strategic emphasis on agribusiness, food industries, and integration into global agro-value chains.

Although **developing countries and emerging markets heavily rely on the agricultural sectors for their economic growth**, investment by the private sector remains relatively low. The paucity of private sector investment is very often due to the lack of enabling environment provided in developing countries, e.g. **inadequate policy framework and their implementation.** On the other hand, agro-food businesses are often unable to ensure efficient, transparent, and compliant practices throughout the value chains because of technology knowledge gaps, usually offered by local tertiary/support services.

The evolving policy and regulatory environment of food and agriculture ranging from trade and markets policies, fiscal policies, producer, consumer, and general support service as well as human rights, environmental and safety regulatory policies pose challenges to micro, small and medium-sized enterprises (MSMEs) transformation, food systems, and industrial transformation in general. These exacerbated the already dire challenges smallholder farmers, food processors, and industrialists face as principal actors along the agro-food value chains including know-how, technology, energy, digital gaps and information asymmetry, finance and infrastructure or specialized industry parks. Thus food system transformation should prioritize circularity, transparency and climate responsive agriculture and agribusiness, fulfilling the sustainability agenda in compliance with environmental and social standards.

An efficient transformation of the food systems for a bigger and better global food security outcomes must tackle the governance and policy issues; the economic and production bottlenecks, socio-demographic issues of gender and inclusivity, and the climate and environmental threats.





Addressing the challenge

The prevailing approach to global food security is piecemeal, but it is evident that the road to lasting food security for all is a multi-lane highway, informed by system-wide and multi-dimensional perspectives. Cognizant of the high food and post-harvest losses; low production, productivity and value addition; and escalating food crisis, UNIDO favors a systematic approach to inclusive and sustainable food security anchored in three-prongs: (1) strengthening the link between agriculture production, food processing, and value addition; (2) reducing post-harvest loss and food waste; (3) and forging partnerships for immediate and direct support to the most vulnerable groups.. This systematic three-prong approach can play a key role in the transformation of agro-food systems.

Building production, processing, and value addition bridges

This prong of UNIDO approach addresses the binding constraints that undermine the availability and accessibility (economic, social, and physical access) dimension of food security. UNIDO provides technical support to the actors across food supply chain through human capacity building, technology support, infrastructure and common user facilities, agro-food transformation hubs/centers of excellence, rural transformation centers, and industrial parks, finance and market access support, food safety, quality, standards, and supply chain management

support, access to research and innovation, climate-smart practices, and government policy support.

Many agribusinesses will thus be enabled to develop innovations, adopt smart practices to better adapt to the impact of climate change, and decarbonize their existing practices through efficiencies in the production processes. Improved practices should be coupled **with robust educational and vocational programs in order to serve enterprises with skilled and well-educated labour** in primary production, manufacturing, and tertiary services. This would require several governmental measures and tools enabled through industrial policies, private sector financing and localization of the tertiary sector. Building bridges between productions, processing, and value addition help reduce food loss and waste through post-harvest and food losses.





Partnership for immediate and direct support to the most vulnerable populations

UNIDO recognizes the multi-dimensionality of food security and every human's inalienable right to safe and healthy food, within the purview of the principle of leave no one behind. UNIDO thus prioritizes, as part of its holistic approach to food security, strategic partnerships that enable direct access to food for affected populations. Leveraging the diverse and complementary mandates of the UN-system organizations and other development partners, UNIDO endeavors to harness the combined power of local and regional food industries processing potential and global humanitarian food purchasing power to ensure sustainable production, sourcing, and supply of safe and nutritious food for vulnerable populations across the world. Through this, not only are local SMEs and food industries transformed, but constructs a formidable link between humanitarian and nutrition programming and local economic and industrial transformation – capitalizing on these for better food security outcomes.

Access to high-end markets in industrialized nations will become more complex and competitive. As mandatory due diligence requirements become a new regulatory trend, countries addressing human rights issues and transforming their environmental practices could gain significant trade advantages and challenges.

Reducing post-harvest loss

Conventional approach to food security has been to increase the quantity of food available. But evidence have shown that a lot of the food produced is lost and wasted. Plugging the post-harvest food loss in the food systems is critical to a sustainable food security and food system. Infrastructure, particularly those of strategic relevance, like storage capacities at ports and airports, are necessities to ensure the competitiveness and affordability of food commodities. Above all storage facilities, technology, and capacity building of smallholder farmers and MSMEs, who are the front liners, is essential to reducing food losses and wastage. Food supply chain, food retail and wholesale, also require innovative technology and policy tools that tighten the link between food processing and food consumption. To this end **integrated agro-food parks (IAFPs) are critical for food security and rural development.** Established at the intersection of rural and urban environments, the IAFPs approach benefits processing firms in that it relieves firms from the burden of the initial capital investment by providing the requisite infrastructure and services for agro-processing in the IAFP, as well as regular supply of raw material at a predetermined quality and quantity, allows them to optimize utilization of their processing capacity. For the smallholder farmers and agrarian communities, it allows for better integration into value chains through supply agricultural raw materials to agro-industries on a demand-led contract basis, as wells as off-farm employment opportunities in the IAFPs and allied industries.





UNIDO's role



Food security can only be tackled by addressing the complexity of poverty reduction and food system transformation. Considering current global trends and the needs of Member States, UNIDO will contribute to the following areas for improved food security in its support to Member States:

- » **Sustainable food systems for reduced post-harvest losses**
- » **Improved skills and capacities for better jobs in industrializing countries**
- » **Addressing investment gaps in agribusiness and agriculture**
- » **Promoting agro-innovation and new technologies**
- » **Strategic infrastructure for resilience in global south**
- » **Improved nutrition and food safety**

Accordingly, the following strategic areas are being identified to contribute to the main priorities of Member States to spur economic transformation:



Strategic area 1

Sustainable food systems for reduced Post-Harvest losses

UNIDO will support its Member States based on its long experience in food value chain development and connecting them to regional and continental supply chains.

- » **Reduction of food losses:** Up to 40 percent of food produced still does not reach the consumer due to lack of investment in the post-harvest sector. Using UNIDO's expertise in this area, new initiatives will be developed, together with Food and Agriculture Organization (FAO), World Food Programme (WFP), and International Fund for Agricultural Development (IFAD) to optimize investments in harvest and post-harvest technology, dry and cold, storage, processing, packaging, and marketing along the value chain and provide trainings to stakeholders.
- » **Innovative partnerships:** Collaboration with FAO, the program Agrifood System Transformation Accelerator (ASTA) provides unique opportunities to accelerate investments in agro-food value chains and providing end-to-end solutions.

AGRIFOOD SYSTEM TRANSFORMATION ACCELERATOR (ASTA)

ASTA is a global systems-based program led by UNIDO and FAO to assist countries in transforming their agro-food systems by facilitating innovative partnerships and SDG-compliant investments in selected value chains. ASTA designs and implements catalytic systems-based projects that create new opportunities and partnerships at the interface between the public, private and civil society sectors. Implementation is human-centered and stakeholder-driven from the start and is based on continuous learning and adaptation by both project and stakeholders to achieve sustainable socio-economic, environmental and resilience impacts at scale. ASTA uses its own sophisticated and fully field-tested methodology to create solutions within the food system that are self-sustaining, adaptive and resilient.



Rudi Moeridjan/Intersnap Visual Arts



Strategic area 2

Improved skills and capacities for better jobs in industrializing countries

MSMEs are very often the backbone of rural economies and therefore building their resilience through improved competitiveness is a crucial part of structural transformation. Better skills play a crucial role to improve the productivity, efficiency of MSMEs, and diversify their product portfolios, including value addition. UNIDO will aim to build technical skills downstream of the farm gate to create decent jobs, particularly among youth and women, and improve productivity and value addition through technology transfer, extension services and digital solutions:

- » **Center of Excellences:** Capacitated institutions will serve as a vector to deliver supporting services on compliance and productive capacities to the private sector. The service portfolio of these centers is being developed based on the local demand and needs to provide added value to existing food and agricultural products.
- » **Improved agricultural inputs and extension services:** the delivery of improved extension services by public and private institutions with a focus area of agricultural inputs, food safety and precision agriculture will enable farmers to have access to the latest technologies and scientific knowledge.
- » **Diversification of economic income for youth and women:** The facilitation of new opportunities for youth and women in agriculture/non-food sectors and allied industries, e.g. valorisation of biomass

- » **SME development tools:** Development and promotion of SMEs performance management solutions will lead to improved productivity, efficiency, and sustainability of current practices.



Strategic area 3

Addressing investment gaps in agribusiness

Covering the global investment gap will only be possible by developing new types of innovative financing solutions based on partnerships. UNIDO will facilitate domestic investment and foreign direct investment (FDI) in rural and peri-urban areas of developing economies by assisting infrastructure planning and de-risking investments. Many investment gaps could be tackled by gathering relevant parties addressing the financing needs of MSMEs in developing countries.

- » **Access to finance:** UNIDO will collaborate with local banks and International Financial Institutions (IFIs) for the development and promotion of innovative financial solutions in agriculture and agribusiness to enable them upgrade their business practices.
- » **Collaboration with international finance institutions:** UNIDO will partner with IFIs and the private sector to facilitate larger investments required for infrastructure development.
- » **Organization of investment forums for agribusinesses:** Engagement among a wide group of stakeholders allow to identify possible solutions and create new business partnerships with the involvement of the public and private sector.



Strategic area 4

Promoting agro-innovation & technologies

Tackling global challenges, such as climate change, pollution, water shortage, loss of biodiversity, in food and non-food MSMEs (e.g. textile, leather, and non-timber forest products) requires expeditious solutions based on innovative technologies and techniques. Circular and smart practices, renewable energy, and improved water management practices are just a couple of examples where technology can contribute to enhanced practices of MSMEs. Innovation entails the ability of businesses to transform their practices by using data, applying regenerative and cleaner processing technologies. But without access to them locally, MSMEs will not be able to compete in global markets. Therefore innovation hubs/centers can serve as platforms to develop or promote existing agricultural technologies and services for MSMEs.

- » **Innovation hub for agricultural technologies (IHAT):** Farmers and agribusinesses require a number of support services to ensure their competitiveness as well as ability to adopt their practices for product portfolio diversification or risk mitigation. IHAT is a new approach to develop innovation support services for companies in developing new solutions, addressing the challenges of agribusinesses, and mainstream local innovations.
- » **Development of circular and smart practices for stakeholders involved in textile, leather and non-timber forest products.**
- » **Promotion of biobased solutions (bioeconomy) and regenerative practices:** UNIDO has an experience in supporting MSMEs in climate adaptation / mitigation measures through best available techniques (BETs) which are essential contribution to improve stability by reducing vulnerabilities and building resilience to future shocks.



Strategic area 5

Strategic Infrastructure for resilience in industrializing countries

Avoiding disruptions in food supply chain entail the urgent need of upgrading strategic infrastructures. Rural transformation centers (RTCs), integrated Agro-food parks (IAFPs), and storage capacities are essential elements for national food security and therefore conducting feasibility studies and technical assistance throughout the development and operational phases will improve the likelihood for their adequate use.

- » **Resilience diagnostic for food security based on industrial infrastructure:** The past years show that many countries are unable to withstand shocks affecting food supply chains, resulting in food crisis. Assessment of national capacities on industrial infrastructures required for food and non-food supply chains will contribute to relevant sections of countries' industrial policies.
- » **Development of agro-food parks:** UNIDO has supported several countries in conceptualizing and establishing agro-food parks. As part of these activities UNIDO has developed the feasibility studies for and operationalization of integrated Agro-food parks and storage capacities, and has received requests from several African countries for similar support.
- » **Development of common services for resilient infrastructure:** UNIDO assisted the development of common services for various agricultural value chains, for instance affluent water treatment for tanneries. Pollution caused by other industries lead to various public health and production challenges, including antimicrobial resistance, foodborne illnesses and land degradation.

INTEGRATED AGRO-FOOD PARKS

- » An agro-food park comprises of an agro-processing hub (APH) served by a network of rural transformation centres (RTCs). The APH is a centrally managed clusters of agro-industrial and allied firms grouped to gain economies of scale and positive externalities by sharing utilities, common and specialized infrastructure, and taking advantage of opportunities for bulk purchasing and selling, as well as business services.
- » Each RTC which link producers to the agro-industries at APHs, comprises a physical complex of facilities that serves as an aggregation point where agricultural produce from farming communities or collection centres is collected, sorted, stored and may undergo primary processing (according to product-specific need), before onward transport to the APH, or direct marketing to consumers (as may be the case for fresh fruits and vegetables).
- » To date UNIDO has supported Ethiopia in the establishing and operating agro-food parks; three APHs are under development in Senegal, and others in the design and planning stages in Kenya, Tanzania, and Zambia among others.



Strategic area 6

Improved nutrition and safety of food

Food security also entails the need that the food is safe and nutritious for consumers. Food safety is a shared responsibility that should be ensured from farm to fork. Enabling the food sector to comply with food regulatory and market requirements, including nutrient content, would contribute to economically more resilient operation and simultaneously enhance public health outcomes. UNIDO collaborates with a wide range of stakeholders in nutrition and food safety, including UN agencies (FAO, IAEA, WHO, WFP), business association and cooperatives, as well as academia.

- » **Food safety regulatory programmes:** UNIDO has a long history in delivery food safety interventions from the angle of competitiveness, market access, and conformity assessment services. UNIDO will continue to support food businesses in selected value chains by improving their compliance capacities and creating enabling environment through local public and private services.

VIENNA FOOD SAFETY FORUM:

- » UNIDO brings together the global food safety community to promote lessons learned and share experiences through an annual food safety forum that has been launched in 2022.
- » The forum creates a platform among the private sector, regulators and academia to forge the future of food safety together also contributing to the work of the Codex Alimentarius in emerging topics.



Vienna Food Safety Forum 2022

- » **Improved food safety capacities and competences:** UNIDO continues to support enhancing institutional capacities of food safety competent authorities when it comes to testing and inspection, including digital performance monitoring framework. UNIDO will focus on developing special programmes focusing on competent authorities' capacities in assisting local food businesses towards market and regulatory compliance.
- » **Food fortification:** In collaboration with WFP, UNIDO will support the development of production and supply capacities for local and regional nutritious food products. The supported SMEs will be able to access markets including WFP humanitarian programmes





Partnerships



International organizations

UNIDO is considered as a partner in improving the food security situation in the Member States by focusing on economic transformation through inclusive and sustainable industrialization. As food security is wrapped around by complex development challenges, close collaboration among development agencies is more required than ever before. The **Food and Agriculture Organization (FAO)** of the United Nations and UNIDO signed a Memorandum

of Understanding in October 2022, focusing on normative work and cooperation in food security, zero hunger, and food safety. The two organizations have launched the Agrifood Systems Transformation Accelerator (ASTA) which will have a socio-economic and environmental impact by transforming practices in selected value chains. The **International Atomic Energy Agency (IAEA)** provides nuclear technologies and the know-how to Member States on food irradiation, food testing, authenticity, and climate-smart agriculture solutions. International finance institutions (IFIs), like the **World Bank, African Development Bank or Islamic Development Bank**, can work as a lender or donors of larger initiatives, which might also include the purchase of equipment or the development of strategic infrastructure for food security. UNIDO offers a unique partnership to the **World Food Programme (WFP)** by building capacities of local agribusinesses supplying nutrient-intensive food to WFP for its humanitarian assistance programs. UNIDO collaborates with **IFAD** in climate-related interventions which can ensure the resilience of MSMEs.



PARTNERSHIP WITH WFP ON FOOD SECURITY AND FOOD SYSTEM TRANSFORMATION

In collaboration with WFP, the Global Programme Framework for local sourcing of specialised nutritious food leverages the two institutions' complementary mandates to address the twin problem of hunger and poverty through increased local production, processing and procurement of food for humanitarian assistance. Key interventions include strengthening smallholder farmers' resilience, reduction of post-harvest losses through provision of innovative post-harvest management, first mile storage, value addition infrastructure, energy, as well as financial and technological solutions.



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Global partnerships

Exploring and joining existing global initiatives will offer new avenues for delivering UNIDO's services and provide coordination mechanisms at the global level. The international community has already decided to advance the food security agenda through special initiatives, such as the Global Alliance for Food Security or the Global Agriculture and Food Security Program (GAFSP) of the World Bank. UNIDO organizes international conferences to bring together development partners, Member States and the private sector for the identification of new solutions and local partnerships addressing food security challenges from economic access and stability perspective.



Business partnerships

UNIDO engages in unique partnerships with multinational companies in applying their development tools and assist countries in their structural transformation. These partnerships will focus on areas like improved agricultural extension services and inputs, skills development, support to the smallholder farmers. These partnerships include multinational companies such as Ritzer sport, Illy Café, Agrana etc. and will expand partnership with private sector whenever, their long-term business interest converges with UNIDO's mandate on sustainable agribusiness development.



Academia and research

UNIDO will collaborate on technology and knowledge transfer with universities and Consultative Group on International Agricultural Research (CGIAR) and International Union on Food Science and Technology (IuFOST), Universities such as Wageningen University and Research. In case of interventions, UNIDO will engage the academia to improve their practices and support demand-driven research. Partnerships with academia and research institutions is particularly relevant for the set-up and successful operation of Innovation Hubs for Agricultural Transformation.





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